SUMMARY OF RESULTS FROM THE CALIFORNIA PESTICIDE ILLNESS SURVEILLANCE PROGRAM - 2000 -

HS-1831

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Pesticide Illness Surveillance Program – 2000

Background on the Reporting System

The California pesticide safety program, which the Department of Pesticide Regulation (DPR) administers, is widely regarded as the most stringent in the nation. It includes requirements for thorough data review of all pesticides[1] before registration for use in California, safety training of all pesticide handlers and field workers, and ongoing monitoring of people and the environment to detect potential for pesticide exposure. Mandatory reporting of pesticide illnesses has been part of this comprehensive program since 1971. The U.S. General Accounting Office (GAO, 1993) noted that "California had by far the most effective and well-established monitoring system in place" and that the U.S. Environmental Protection Agency (U.S. EPA) "relies heavily on the pesticide illness data collected by the California monitoring system ... and has tried to encourage selected states to develop monitoring systems modeled after the California system." Several other states have initiated surveillance programs for pesticide illness. As yet, most of them have collected only limited numbers of case reports, and the U.S. EPA still relies heavily on California data.

DPR maintains its surveillance of human health effects of pesticide exposure in order to evaluate the circumstances of pesticide exposures that result in illness. Under a statute enacted in 1971 and amended in 1977 (now codified as Health and Safety Code Section 105200), California physicians are required to report any suspected case of pesticide-related illness or injury by telephone to the local health officer within 24 hours of examining the patient. The health officer informs the county agricultural commissioner (CAC) and also completes a pesticide illness report (PIR), copies of which are distributed to the Cal/EPA Office of Environmental Health Hazard Assessment, to the Department of Industrial Relations (DIR), and to DPR. Scientists regularly consult the data collected to evaluate the effectiveness of DPR's pesticide safety regulatory programs and assess the need for changes.

[1] "Pesticide" is used to describe many substances that control pests. Pests may be insects, fungi, weeds, rodents, nematodes, algae, viruses or bacteria -- almost any living organisms that cause damage or economic loss, or transmit or produce disease. Therefore, pesticides include herbicides, fungicides, insecticides, rodenticides, disinfectants, as well as insect growth regulators. In California, adjuvants are also subject to the regulations that control pesticides. Adjuvants are substances added to enhance the efficacy of a pesticide, and include emulsifiers, spreaders, and wetting and dispersing agents.

DPR strives to ensure that the Pesticide Illness Surveillance Program (PISP) captures the majority of illness incidents. For example, since doctors do not always properly report pesticide cases, DPR's Worker Health and Safety Branch (WH&S) also reviews Doctors' First Reports of Occupational Illness and Injury (DFROII), which California's Labor Code requires workers' compensation claims payers to forward to DIR. Staff members select for investigation any DFROII that mentions a pesticide, or pesticides in general, as a possible cause of injury. Reports that mention unspecified chemicals also are investigated if the setting is one in which pesticide use is likely. In typical years, DFROII review identifies two-thirds to three-quarters of the incidents investigated.

Over the past several years, DPR has worked with the California Poison Control System (CPCS) to assist in identifying potential pesticide illnesses. Prior to 2000, WH&S scientists managed two pilot projects where CPCS specialists would offer to report pesticide-related illnesses for physicians. Although the results of these projects were encouraging, funding was unavailable in 2000. CPCS specialists, however, continued to educate callers about the reporting requirement. The Regional Poison Control Center at the University of California, Davis, Medical Center, which serves the northeast quadrant of California, was particularly active in continuing to encourage reporting in 2000. A summary of the 2000 reporting results from CPCS can be found at the end of this document.

The agricultural commissioner of the county where the incident occurred investigates each incident. DPR provides instructions, training, and technical support for conducting investigations. These instructions include directions for when and how to collect samples of foliage, clothing, or surface residues to document environmental exposures. As part of the technical support, DPR maintains specialized laboratories to analyze the samples. The CACs prepare reports describing the circumstances in which pesticide exposure may have occurred and any other relevant aspects of the case. When appropriate, they request authorization from the affected people to include relevant portions of their medical records with the report. When investigations identify additional affected people (not previously reported by other mechanisms), they are identified in the investigation report and recorded in the PISP database.

WH&S scientists evaluate the physicians' reports and all the information the CACs have gathered. They then classify incidents according to the circumstances of pesticide exposure. Evaluators undertake a complex task of determining the likelihood that a pesticide exposure caused the incident. Standards for the determination are described in the PISP program brochure, "Preventing Pesticide Illness," which is available through the DPR web site www.cdpr.ca.gov or by request.

Excessive exposure to pesticides may cause illness by various mechanisms, and the surveillance program attempts to monitor all of them. Every pesticide active ingredient has a pharmacologic effect by which it controls its target pests. Pesticide products may have other potentially harmful properties in addition to the qualities designed to control pests. The PISP collects information on adverse effects from any component of pesticide products including the active ingredients, inert ingredients, impurities, and breakdown products. Whether pesticide products act as irritants or as allergens, through their smell or by causing fires or explosions, DPR's mission is to mitigate exposures that compromise health.

The PISP database provides the means to identify high-risk situations warranting DPR action including the implementation of additional California restrictions on pesticide use. Taking illness data into consideration, DPR may adjust the restricted entry interval following pesticide application, specify buffer zones or other application conditions, or require pesticide handlers to use protective equipment that meets certain standards. In some instances, changes to pesticide labels provide the most appropriate mitigation measures, and DPR cooperates with the U.S. EPA to develop appropriate instructions for users throughout the country. If an illness incident results from illegal practices, state and county enforcement staff take appropriate action to deter future incidents.

DPR scientists participate in the working group convened by the National Institute for Occupational Safety and Health (NIOSH) to develop standards for collection of information on pesticide illnesses. NIOSH now partially supports programs in the states of Florida, New York, Oregon, and Texas which make use of the standards defined by the working group. This NIOSH

program also supports pesticide-related work by the Occupational Health Branch of the California Department of Health Services, which coordinates closely with the WH&S Branch.

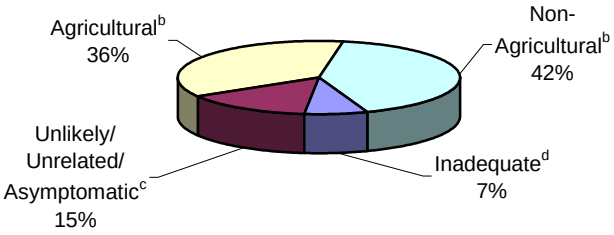
Changes to the Data Collection Program

The PISP continues to collect data using the revised and enhanced computer program that debuted in 1998. The new program provided the opportunity to increase the amount of data collected and to organize it more logically. Annual summaries for 1998 and 1999 describe specifics of the revision. Cases from 1996 and 1997 have now been re-evaluated and coded to bring them up to the 1998 standards. In 2000, DPR increased the amount of detail collected on the types of application equipment used. DPR revised the summary tables available with this report to make use of some of the enhancements. Analysis is in progress to develop a system to make surveillance data available to the public via the DPR Internet Web site.

2000 Numeric Results -- Totals

During 2000, DPR received reports of 1,144 people whose health may have been affected by pesticide exposure. After investigation, WH&S scientists found that pesticide exposure had been at least a possible contributing factor to 893 (78%) of the 1,144 cases (Figure 1). Of those 893 cases, 417 (47%) involved use of pesticides for agricultural purposes and 476 (53%) occurred in other settings. Evidence established a definite relationship to pesticide exposure for 159 of the cases. Another 478 were classified as probable, with 256 entered as possible. Of the 1,144 cases investigated, 251 either had insufficient data available to evaluate the case (82 cases) or evidence established an unlikely or unrelated relationship to pesticide exposure (169 cases). Tabular summaries presenting different aspects of the data are available through DPR's Web site at www.cdpr.ca.gov, or by contacting the WH&S Branch.

Figure 1: Outcome of 2000 Pesticide Illness Investigations[a]



[a] Total cases investigated = 1144.
[b] *Agricultural* and *Non-Agricultural* refers to the intended use of the pesticide.
[c] *Unlikely/Unrelated/Asymptomatic* refers to cases determined as unlikely related or unrelated to pesticide exposure or the exposed person did not develop symptoms.
[d] *Inadequate* means that there was not enough data available or reported to determine if pesticides were involved in the case.

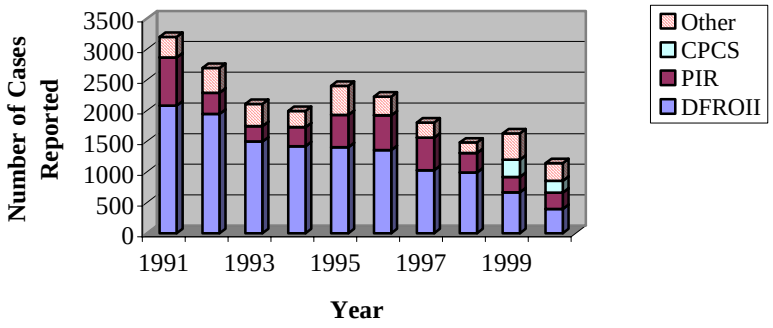
The 1,144 total cases investigated in 2000 represent a decrease of 485 (30%) relative to 1999, when 1,629 cases were investigated. There was a decrease of 308 (26%) pesticide-related cases in 2000 (893 cases) relative to 1999 (1,201 cases). Occupational exposures (those that occurred while the affected people were at work and eligible for workers' compensation) accounted for 656 (73%) of the 893 pesticide-related cases identified during 2000.

Enforcement actions often are still under consideration when WH&S Branch receives the investigative reports. Based on the information available, WH&S scientists were able to recognize that actions already prohibited by pesticide safety regulations had contributed to 382 (43%) of the 893 cases evaluated as definitely, probably, or possibly related to pesticide exposure. This indicates that safety could be further improved through increased compliance efforts.

A distinct downward trend over the past decade is apparent for all pesticide categories, all areas of the state, all activities, and both agricultural and other use scenarios. This trend is limited, however, to occupational exposures, and corresponds to a drop in retrievals of doctor's reports (DFROIIs) forwarded to the Department of Industrial Relations by workers' compensation

claims payers (Figure 2). The decrease in DFROIIs has been partially compensated by reporting through poison control centers and, for agricultural exposures only, by an increase in the number of cases identified independently of formal notification systems. The decrease in the number of DFROIIs may reflect changes in insurer procedures as they convert to electronic transmission of employers' reports. If this were the case, all programs that depend on DFROIIs would see comparable drops. The Department of Health Services uses DFROIIs to monitor occupational asthma and carpal tunnel syndrome, but the number of DFROIIs for those conditions has remained consistent. DPR plans to investigate the cause of the decrease in DFROII reports.

Figure 2: Number of Cases Reported by Method of Reporting, 1991-2000

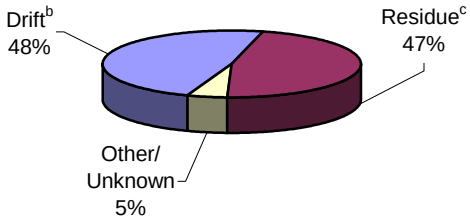


DFROII – Doctor's First Report of Occupational Illness and Injury (Workers' Compensation report).
PIR – Pesticide Illness Report (physician reporting).
CPCS – California Poison Control System (mediated physician reporting).
Other – All other methods of reporting.

Agricultural Field Worker Incidents

In 2000, 161 cases involving field worker illness and injury were evaluated as probably or possibly related to pesticide exposure; pesticide exposure could not be proved definitely responsible for any field worker illness or injury. (Definitions of definite, probable and possible can be found in the "Preventing Pesticide Illness" which is available at http://www.cdpr.ca.gov/docs/dprdocs/pisp/brochure.pdf). Exposure to residue was implicated for 75 (47%) of the field workers. Another 78 field workers (48%) were exposed to drift. The other eight (5%) encountered other or unknown exposures (Figure 3).

Figure 3: Field Worker Exposure to Pesticides, 2000[a]



[a] Total field worker cases associated with pesticide exposure = 161.
[b] Drift refers to field worker cases associated with exposure to drift from a pesticide application.
[c] Residue refers to field worker cases associated with exposure to residue on the crops.

Of the total 161 cases of field workers exposed to pesticides by any mechanism, DPR classified 89 as possible and 72 as probable. Exposures to residue gave rise to 52 of the cases classified as possible and 23 of those classified as probable. Reentry during the restricted entry interval contributed to 43 (57%) of the 75 cases of field workers exposed to residue. Other violations contributed to four (5%) of the 75, including two that also involved reentry violations.

WH&S assisted in investigating two episodes in which field workers were exposed to pesticides, both in Tulare County, one involving drift and one involving residue. In the residue episode, 17 orange harvesters began working in the orchard during the restricted entry interval. All 17 developed headaches and were treated and released at a local medical clinic. Foliage samples taken the following day detected the pesticide at levels that did not raise health concerns (Spencer, 2001a).

An application of chlorpyrifos and propargite to almonds drifted into a vineyard where 24 women were working; all 24 developed symptoms that included nausea, vomiting, dizziness and weakness. Environmental samples confirmed the occurrence of drift and determined residue levels low enough to permit safe resumption of work. Microgram quantities of pesticides were detected in two of four articles of clothing analyzed (Spencer, 2001b). Pesticide metabolites were

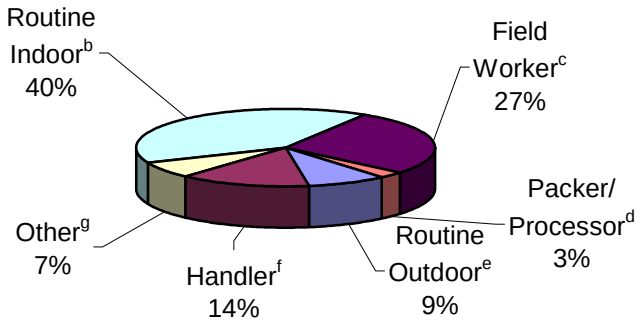
detected in the workers' urine at levels comparable to those found in a sample of the general population (Hill, 1996).

Drift Exposure

As in 1998 and 1999, drift exposures accounted for the largest number of pesticide exposures in 2000. A total of 287 individuals reported symptoms definitely, probably or possibly related to exposure to drift (Figure 4); this involved 121 separate episodes of drift. This includes 116 people exposed in the course of routine indoor activities (e.g., office worker, store clerk, etc) and 25 exposed during routine outdoor activities, in addition to 78 field workers, and 40 pesticide handlers (mixers, loaders, and/or applicators). Eight people were drifted upon while packing or processing harvested crops, by contrast to the 81 people exposed to drift in that situation during 1999. Drift from agricultural applications was responsible for 180 of the 287 drift exposures, including all 78 field workers, all eight of the packers, 64 of the 116 people exposed during routine indoor activities, and 15 of the 25 drifted on during routine outdoor, but only six of the of the pesticide handlers.

The largest drift episode of the year affected three correctional officers and 55 inmates at a Kings County prison, all of whom noticed the odor of an application around poultry houses operated by the facility. DPR learned of this episode too late to take environmental samples, and the one garment available for analysis showed no residue. Insufficient evidence was available to demonstrate the occurrence of drift.

Figure 4: Illnesses Associated with Exposure to Pesticide Drift by Activity, 2000[a]



[a] Total drift cases for 2000 = 287.
[b] Routine Indoor includes people in offices and businesses, residential structures, etc. (occupational and non-occupational) who were not handling pesticides.
[c] Field Worker are people working in agricultural fields at the time of drift exposure.
[d] Packer/Processor includes people involved in processing harvested crops.
[e] Routine Outdoor includes people outdoors (occupational and non-occupational) with little expectation of contacting pesticides (e.g., gardeners not handling pesticides, residents).
[f] Handler includes people mixing, loading and applying pesticides, repairing pesticide equipment and flagging for aerial application.
[g] Other/Unknown – Any other type of activity or unknown activity.

The most significant drift episode occurred in Ventura County, where an application to lemon trees drifted across a street onto school grounds while young children were arriving for class. A concerned resident alerted the Ventura County Agricultural Commissioner to this event, and an investigator arrived in time to witness the improper application and order the operation stopped. Environmental samples also confirmed pesticide drift. A total of 32 people (24 children, six parents, and two teachers) reported symptoms that included headache, nausea, upset stomach, stomach cramps, diarrhea, and irritated eyes. WH&S scientists identified only three of these people who were exposed directly to pesticide drift, and another seven were exposed to residue of the drifted pesticide. In most cases, WH&S scientists did not have information on individual exposures.

The Ventura County District Attorney brought charges against the grower. The action was still pending as of February 2002. Separately, a judge issued a restraining order restricting pesticide applications in the orchards adjacent to the school. Under the restraining order, the grower may not apply pesticide to those areas earlier than 6 p.m. on a school day, and he must give notice to school officials 72 hours in advance of pesticide applications to those areas. To avoid similar problems at other locations, the Ventura County Agricultural Commissioner imposed similar restrictions on all agricultural chlorpyrifos applications adjacent to school property.

Morbidity and Mortality

Among the 637 cases evaluated after investigation as definitely or probably related to pesticide exposure, 33 people were admitted to hospitals and 144 lost time from work. Of the 256 possible cases, three reported hospitalization and 51 lost work time.

DPR investigated nine deaths that occurred during the year 2000. Five of them were suicides by pesticide ingestion. Two agricultural workers died of strokes, which were not related to pesticide exposure. The other two fatalities occurred when aerial applicators crashed. In one of these, mechanical problems with the aircraft were documented. The other, however, could not be evaluated because the pilot had applied methomyl on the day before the fatal accident and dimethoate two days before, but his remains were not tested to determine whether pesticide exposure may have contributed to the accident.

DPR also learned of 21 non-fatal suicide attempts using pesticides, and assisted in the treatment of one by analyzing the patient's vomitus to identify the pesticide he had ingested. DPR also learned of a case of child abuse in which a man forced his eight-year-old son to swallow pesticide. The child was hospitalized and treated successfully for toxicity. No other information is available, as the police investigation was still in progress when the pesticide illness investigation was submitted.

Examples of the Importance of Compliance with Safety Procedures

Severe intoxications typically result from careless and often illegal use of pesticides. As in past years, several young children were injured by inappropriately stored pesticides. A two-year-old girl took a swallow of chlorpyrifos that her grandmother had diluted into a drinking bottle. Another two-year-old girl tasted a sanitizer her father brought home from work at a dairy. These two children were treated and released.

Two young boys were less fortunate, although both ultimately recovered. A four-year-old boy drank from a water bottle in which a neighbor had diluted a combination product containing acephate organophosphate insecticide as well as triforine (a fungicide) and fenbutatin-oxide (a miticide). He became seriously ill and was admitted to a hospital for treatment of organophosphate toxicity. A two-year-old boy became critically ill when he drank diazinon concentrate from a juice container left unattended on a table at his home. He was on a ventilator for a day and in the hospital for four days, but recovered with treatment. Child protective services were consulted before his discharge.

Regulations prohibit storing pesticides in any container that does not identify the contents appropriately. Using a food container to store pesticides is also prohibited and compounds the danger.

Analysis of Information on Pesticide Toxicity from Sources Outside PISP

The U.S. EPA funded a project to collect and analyze data from death certificates, hospital inpatient records, and poison control contact logs. This work demonstrated that pesticide poisoning is an uncommon cause of death or hospitalization in California. Changes in pesticide use patterns, particularly substitution of anticoagulant rodent baits for products containing arsenic or strychnine, have contributed to a ten-fold drop in the rate of accidental death from pesticides over the past 30 years. Death during childhood has decreased even more dramatically (Mehler, 2001a).

We found that most hospitalizations and poison control consultations about pesticide exposure concerned domestic exposures (Mehler, 2001b). An estimated 27% of hospitalizations and 9% of poison control consultations concerned suicide attempts, most commonly by people in their 20s and 30s. The largest age group for unintentional exposures was children less than five years old, who constituted an estimated 29% of hospital admissions and 34% of poison control consultations for unintentional pesticide exposures.

The PISP, by contrast, recorded primarily occupational exposures (87%). It recorded exposure to agricultural-use pesticides in 39% of its cases, compared to 5% among hospital records and 13% in poison control logs. Less than 1% of PISP records concerned either suicide attempts or children less than five years old.

File linkage indicated that the PISP learns of all episodes in which groups of people are exposed to pesticides, and that reports reach the surveillance program for roughly half of all exposures to agricultural-use pesticides (Mehler, 2001b). This represents relatively good reporting for surveillance in these categories (Teutsch 1994). The major gap in surveillance coverage is for residential exposures, including suicide attempts and exposures of children.

Results of Cooperation with Poison Control

As discussed earlier in this report, DPR constantly works to improve reporting of pesticide illnesses. In 1999, U.S. EPA funding allowed DPR to contract with the California Poison Control System (CPCS) to assist physicians in reporting pesticide cases. Federal funding was unavailable in 2000, but concerned poison control personnel continued to inform health care workers of their responsibilities under the law, to distribute reporting forms, and even to submit reports. DPR assigned 190 cases for investigation in 2000 based on information that CPCS had helped to provide. Investigation revealed at least a possible relation to pesticide exposure in 154 of the 190 cases.

These 154 cases include 100 (42%) of the 237 cases associated with non-occupational exposures, 24 (67%) of 36 hospitalizations, 39 (76%) of 51 cases in which people ingested pesticide, and 14

(47%) of the 30 cases involving children younger than 10 years old. Cases in which CPCS assisted also included all six of the cases reported on the day of exposure, 32 of the 39 reported the day after exposure, and 122 of the 185 reported within a week of exposure. The average time from exposure to notification was 15 days for cases that CPCS helped to report. For all other cases, the average time from exposure to notification was 78 days.

These figures demonstrate the importance of poison control intervention to identify non-occupational and pediatric pesticide exposures. This cooperation has been valuable to DPR surveillance, which otherwise has limited ability to detect health problems caused by home-use pesticides. Prompt notification enhances the value of investigation, as county agricultural commissioners take advantage of the opportunity to collect environmental samples and to interview the people involved. Availability of federal funds allowed DPR to resume formal cooperation with CPCS in 2001.

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Summary of Illness/Injury Incidents
Reported in California as Potentially Related to Pesticide Exposure
Summarized Statewide and by County of Occurrence[1]
2000

Relationship[2]	TOTAL CASES	Type Of Exposure[3]				Intended Use[4]	
		Direct Contact	Drift	Residue	Other/ Unknown	Agricultural	Non-Agricultural
TOTALS							
Definite	159	112	12	1	34	21	138
Probable	478	101	207	96	74	228	250
Possible	256	21	68	92	75	168	88
Unlikely	32	2	5	10	15	15	17
Indirect	2	0	0	0	2	1	1
Asymptomatic	38	6	11	9	12	16	22
Unrelated	97	0	0	0	0	0	0
Insufficient	14	0	0	0	0	0	0
Unavailable	68	0	0	0	0	0	0
OVERALL	**1144**	**242**	**303**	**208**	**212**	**449**	**516**
COUNTY[5]							
ALAMEDA							
Definite	4	1	0	0	3	0	4
Probable	15	2	1	2	10	1	14
Possible	2	2	0	0	0	0	2
Asymptomatic	2	0	0	0	2	0	2
Unrelated	4	0	0	0	0	0	0
Unavailable	2	0	0	0	0	0	0
AMADOR							
Definite	3	2	1	0	0	0	3
Possible	1	0	0	0	1	1	0

Relationship[2]	TOTAL CASES	Type Of Exposure[3]				Intended Use[4]	
		Direct Contact	Drift	Residue	Other/ Unknown	Agricultural	Non-Agricultural
BUTTE							
Definite	3	3	0	0	0	0	3
Probable	6	0	4	1	1	2	4
Possible	1	0	1	0	0	0	1
Unlikely	1	0	0	1	0	0	1
Unrelated	1	0	0	0	0	0	0
CALAVERAS							
Definite	1	1	0	0	0	0	1
Probable	1	1	0	0	0	0	1
Unavailable	1	0	0	0	0	0	0
COLUSA							
Possible	2	0	0	1	1	2	0
Unavailable	1	0	0	0	0	0	0
CONTRA COSTA							
Definite	1	1	0	0	0	0	1
Probable	7	0	2	0	5	0	7
Unavailable	2	0	0	0	0	0	0
EL DORADO							
Definite	2	0	2	0	0	0	2
Probable	2	0	1	0	1	0	2
Possible	1	0	0	0	1	0	1
Unlikely	1	0	0	1	0	0	1
Unrelated	1	0	0	0	0	0	0
FRESNO							
Definite	5	4	0	0	1	3	2
Probable	21	6	4	3	8	12	9
Possible	18	3	4	7	4	12	6
Unlikely	2	0	0	0	2	1	1
Asymptomatic	1	0	0	0	1	0	1
Unrelated	13	0	0	0	0	0	0
Insufficient	2	0	0	0	0	0	0
Unavailable	3	0	0	0	0	0	0

Relationship[2]	TOTAL CASES	Type Of Exposure[3]				Intended Use[4]	
		Direct Contact	Drift	Residue	Other/ Unknown	Agricultural	Non-Agricultural
GLENN							
Probable	1	0	0	0	1	1	0
HUMBOLDT							
Definite	2	2	0	0	0	0	2
Probable	6	3	2	1	0	1	5
Possible	1	0	0	0	1	0	1
Unrelated	1	0	0	0	0	0	0
IMPERIAL							
Definite	2	0	0	0	2	1	1
Probable	4	1	3	0	0	1	3
Possible	2	0	2	0	0	2	0
KERN							
Definite	3	2	0	0	1	0	3
Probable	6	2	1	2	1	2	4
Possible	10	1	3	5	1	7	3
Unlikely	2	0	1	1	0	2	0
Unrelated	11	0	0	0	0	0	0
KINGS							
Probable	58	0	58	0	0	58	0
Possible	2	0	2	0	0	1	1
Unlikely	1	0	0	0	1	1	0
Unrelated	1	0	0	0	0	0	0
LAKE							
Definite	2	2	0	0	0	1	1
Probable	1	1	0	0	0	0	1
Possible	1	0	0	1	0	1	0
LASSEN							
Definite	2	2	0	0	0	2	0
Probable	1	0	1	0	0	0	1

Relationship[2]	TOTAL CASES	Type Of Exposure[3]				Intended Use[4]	
		Direct Contact	Drift	Residue	Other/ Unknown	Agricultural	Non-Agricultural
LOS ANGELES							
Definite	27	19	1	0	7	0	27
Probable	48	10	14	20	4	0	48
Possible	22	2	3	12	5	0	22
Unlikely	1	0	0	0	1	0	1
Asymptomatic	7	0	1	0	6	0	7
Unrelated	11	0	0	0	0	0	0
Insufficient	3	0	0	0	0	0	0
Unavailable	13	0	0	0	0	0	0
MADERA							
Definite	1	0	0	0	1	0	1
Probable	5	3	2	0	0	4	1
Possible	14	0	3	2	9	14	0
Indirect	1	0	0	0	1	1	0
Asymptomatic	1	0	0	0	1	1	0
Unrelated	2	0	0	0	0	0	0
Insufficient	3	0	0	0	0	0	0
Unavailable	2	0	0	0	0	0	0
MARIN							
Probable	4	1	2	0	1	0	4
Possible	1	0	1	0	0	0	1
MARIPOSA							
Definite	1	1	0	0	0	0	1
Insufficient	1	0	0	0	0	0	0
MENDOCINO							
Probable	3	0	1	0	2	1	2
Asymptomatic	1	0	1	0	0	0	1
Unrelated	1	0	0	0	0	0	0

Relationship[2]	TOTAL CASES	Type Of Exposure[3]				Intended Use[4]	
		Direct Contact	Drift	Residue	Other/ Unknown	Agricultural	Non-Agricultural
MERCED							
Definite	2	2	0	0	0	0	2
Probable	11	3	7	1	0	6	5
Possible	5	1	2	1	1	5	0
Unlikely	2	0	0	1	1	2	0
Asymptomatic	1	0	1	0	0	0	1
Unrelated	3	0	0	0	0	0	0
Insufficient	1	0	0	0	0	0	0
MONTEREY							
Definite	3	3	0	0	0	1	2
Probable	52	3	26	20	3	45	7
Possible	38	0	26	11	1	38	0
Asymptomatic	11	0	3	8	0	11	0
Unrelated	1	0	0	0	0	0	0
Unavailable	2	0	0	0	0	0	0
NAPA							
Definite	5	4	0	0	1	0	5
Probable	1	1	0	0	0	0	1
Possible	2	0	1	1	0	1	1
Unrelated	2	0	0	0	0	0	0
NEVADA							
Definite	1	1	0	0	0	0	1
Unavailable	1	0	0	0	0	0	0
ORANGE							
Definite	3	3	0	0	0	0	3
Probable	14	3	6	4	1	0	14
Possible	8	0	3	5	0	3	5
Unlikely	1	0	1	0	0	0	1
Unrelated	3	0	0	0	0	0	0
Unavailable	8	0	0	0	0	0	0

Relationship[2]	TOTAL CASES	Type Of Exposure[3]				Intended Use[4]	
		Direct Contact	Drift	Residue	Other/ Unknown	Agricultural	Non-Agricultural
PLACER							
Definite	1	1	0	0	0	0	1
Possible	1	0	1	0	0	0	1
Insufficient	1	0	0	0	0	0	0
PLUMAS							
Probable	1	1	0	0	0	0	1
RIVERSIDE							
Definite	2	1	0	0	1	0	2
Probable	13	4	6	2	1	0	13
Unlikely	1	0	0	0	1	0	1
Asymptomatic	2	0	2	0	0	0	2
Unrelated	1	0	0	0	0	0	0
SACRAMENTO							
Definite	9	7	1	0	1	0	9
Probable	7	2	0	1	4	0	7
Unlikely	1	0	0	0	1	1	0
Unrelated	2	0	0	0	0	0	0
Unavailable	8	0	0	0	0	0	0
SAN BENITO							
Probable	2	1	0	0	1	0	2
SAN BERNARDINO							
Definite	6	4	1	0	1	0	6
Probable	5	2	3	0	0	0	5
Possible	2	1	0	0	1	0	2
Unlikely	1	0	0	1	0	0	1
Unrelated	4	0	0	0	0	0	0

Relationship[2]	TOTAL CASES	Type Of Exposure[3]				Intended Use[4]	
		Direct Contact	Drift	Residue	Other/ Unknown	Agricultural	Non-Agricultural
SAN DIEGO							
Definite	6	5	1	0	0	0	6
Probable	19	4	6	4	5	3	16
Possible	5	2	0	2	1	0	5
Unlikely	5	0	2	1	2	1	4
Asymptomatic	1	0	0	0	1	0	1
Unrelated	1	0	0	0	0	0	0
Unavailable	2	0	0	0	0	0	0
SAN FRANCISCO							
Definite	2	1	0	0	1	0	2
Probable	1	1	0	0	0	0	1
Possible	1	1	0	0	0	0	1
Asymptomatic	1	1	0	0	0	0	1
Unavailable	2	0	0	0	0	0	0
SAN JOAQUIN							
Definite	10	7	0	0	3	4	6
Probable	42	5	3	24	10	26	16
Possible	11	2	1	4	4	6	5
Unlikely	6	0	0	1	5	5	1
Asymptomatic	1	0	0	0	1	0	1
Unrelated	3	0	0	0	0	0	0
Unavailable	1	0	0	0	0	0	0
SAN LUIS OBISPO							
Definite	1	0	0	0	1	0	1
Possible	3	0	0	0	3	1	2
Unlikely	1	0	0	1	0	0	1

Relationship[2]	TOTAL CASES	Type Of Exposure[3]				Intended Use[4]	
		Direct Contact	Drift	Residue	Other/ Unknown	Agricultural	Non-Agricultural
SAN MATEO							
Definite	3	3	0	0	0	0	3
Probable	1	1	0	0	0	0	1
Possible	1	0	0	0	1	0	1
Unlikely	2	1	0	0	1	1	1
Asymptomatic	1	1	0	0	0	0	1
Unrelated	2	0	0	0	0	0	0
Unavailable	1	0	0	0	0	0	0
SANTA BARBARA							
Definite	4	3	0	0	1	1	3
Probable	3	1	2	0	0	2	1
Possible	1	0	1	0	0	1	0
Unrelated	3	0	0	0	0	0	0
Unavailable	2	0	0	0	0	0	0
SANTA CLARA							
Definite	10	6	0	0	4	1	9
Probable	3	1	2	0	0	0	3
Possible	11	2	6	0	3	1	10
Unlikely	2	0	1	1	0	0	2
Indirect	1	0	0	0	1	0	1
Unrelated	2	0	0	0	0	0	0
Unavailable	1	0	0	0	0	0	0
SANTA CRUZ							
Definite	1	0	0	0	1	0	1
Probable	7	1	3	2	1	2	5
Unrelated	1	0	0	0	0	0	0
SHASTA							
Definite	2	1	1	0	0	0	2
SISKIYOU							
Asymptomatic	1	1	0	0	0	0	1

Relationship[2]	TOTAL CASES	Type Of Exposure[3]				Intended Use[4]	
		Direct Contact	Drift	Residue	Other/ Unknown	Agricultural	Non-Agricultural
SOLANO							
Definite	5	2	3	0	0	0	5
Probable	9	1	7	0	1	5	4
Possible	2	0	0	0	2	1	1
Asymptomatic	3	0	3	0	0	3	0
Unrelated	1	0	0	0	0	0	0
SONOMA							
Definite	2	2	0	0	0	0	2
Probable	13	4	3	5	1	3	10
Possible	12	3	1	6	2	8	4
Unrelated	6	0	0	0	0	0	0
Unavailable	3	0	0	0	0	0	0
STANISLAUS							
Definite	8	4	1	0	3	1	7
Probable	12	7	1	1	3	5	7
Possible	6	0	1	1	4	3	3
Unlikely	2	1	0	1	0	1	1
Unrelated	11	0	0	0	0	0	0
Unavailable	1	0	0	0	0	0	0
SUTTER							
Definite	3	2	0	1	0	1	2
Probable	3	1	0	1	1	1	2
Possible	2	1	0	0	1	1	1
Unrelated	1	0	0	0	0	0	0
Unavailable	2	0	0	0	0	0	0
TEHAMA							
Probable	3	2	1	0	0	0	3
Asymptomatic	1	1	0	0	0	1	0
Unrelated	1	0	0	0	0	0	0
TRINITY							
Possible	1	0	0	0	1	0	1

Relationship[2]	TOTAL CASES	Type Of Exposure[3]				Intended Use[4]	
		Direct Contact	Drift	Residue	Other/ Unknown	Agricultural	Non-Agricultural
TULARE							
Definite	5	4	0	0	1	1	4
Probable	54	19	29	2	4	42	12
Possible	32	0	2	26	4	30	2
Asymptomatic	1	0	0	1	0	0	1
Unrelated	2	0	0	0	0	0	0
Insufficient	2	0	0	0	0	0	0
Unavailable	1	0	0	0	0	0	0
TUOLUMNE							
Probable	1	1	0	0	0	0	1
VENTURA							
Definite	5	5	0	0	0	3	2
Probable	9	2	3	0	4	4	5
Possible	28	0	4	7	17	27	1
Unrelated	1	0	0	0	0	0	0
Unavailable	6	0	0	0	0	0	0
YOLO							
Probable	1	0	1	0	0	0	1
Possible	5	0	0	0	5	2	3
Asymptomatic	2	2	0	0	0	0	2
Insufficient	1	0	0	0	0	0	0
Unavailable	3	0	0	0	0	0	0
YUBA							
Definite	1	1	0	0	0	1	0
Probable	2	0	2	0	0	1	1
Possible	1	0	0	0	1	0	1

1. **Source:** California Department of Pesticide Regulation, Pesticide Illness Surveillance Program.
The term "potentially related to pesticide exposure" refers to all cases reported to the program, some of which were later determined to be unrelated to pesticide exposure.

2. **Relationship:** Degree of correlation between pesticide exposure and resulting symptomatology.

Definite	:	High degree of correlation between pattern of exposure and resulting symptomatology. Requires both medical evidence (such as measured cholinesterase inhibition, positive allergy tests, characteristic signs observed by medical professional) and physical evidence of exposure (environmental and/or biological samples, exposure history) to support the conclusions.
Probable	:	Relatively high degree of correlation exists between the pattern of exposure and the resulting symptomatology. Either medical or physical evidence is inconclusive or unavailable.
Possible	:	Some degree of correlation evident. Medical and physical evidence are inconclusive or unavailable.
Unlikely	:	A correlation cannot be ruled out absolutely. Medical and/or physical evidence suggest a cause other than pesticide exposure.
Indirect	:	Pesticide exposure is not responsible, but pesticide regulations or product label requirements contributed in some way, (e.g. heat stress while wearing chemical resistant clothing).
Asymptomatic	:	Exposure occurred, but did not result in illness/injury. Cholinesterase depression without symptoms falls in this category.
Unrelated	:	Definite evidence of cause other than pesticide exposure including exposures to chemicals other than pesticides. Since there is no exposure to pesticides, there are no entries under "Type of Exposure" or "Intended Use."
Insufficient	:	The available information is inadequate to make an informed judgment on the relationship between pesticide exposure and the reported symptomatology. For submitted investigations, the investigator failed to make an adequate attempt to obtain the necessary information. Since a relationship to pesticide exposure cannot be determined, there are no entries under "Type of Exposure" or "Intended Use."
Unavailable	:	The available information is inadequate to make an informed judgement on the relationship between pesticide exposure and the reported symptomatology. For submitted investigations, the investigator made an adequate attempt to collect the necessary information, but was not able to do so (e.g., none of the parties concerned could be contacted). There usually needs to be more effort than to say the employee is not available for interview; other parties can often supply useful information. Since a relationship to pesticide exposure cannot be determined, there are no entries under "Type of Exposure" or "Intended Use."

3. **Type of Exposure:** Characterization of how an individual came in contact with a pesticide.

Direct Contact	:	An appreciable amount of pesticide contacted the individual's body surface. This includes: 1) sprays or squirts from application equipment; 2) leaks or spills whether or not related to the application; and 3) deliberate immersion (as when cleaning implements in a basin with antimicrobials). This excludes drift exposures.
Drift	:	Spray, mist, fumes, or odor carried from the target site by air. Drift must be related to an application or mix/load activity.
Residue	:	The part of a pesticide that remains in the environment for a period of time following an application or drift. This includes odor after the completion of an application.
Other/Unknown	:	Any of the following: 1) ingestion; 2) multiple routes of exposure; 3) residue from a spill; 4) exposure to smoke or pyrolitic products from a fire where pesticides are burning; 5) route of exposure is not known.

4. **Intended Use:** Agricultural/Non-Agricultural - Indicates whether the pesticide(s) were intended to contribute to the production of agricultural commodities.

Agricultural : The pesticide(s) were intended to contribute to the production of agricultural commodities, including livestock. This includes: 1) agricultural research facilities, 2) handling of raw agricultural commodities in packing houses, 3) drift from agricultural applications into non-agricultural areas, and 4) transportation and storage of pesticides on farm lands. It excludes forestry operations, although they are classified as agricultural for regulatory purposes. It also excludes manufacture, transportation, and storage of pesticides prior to arrival at the site of agricultural production.

Non-Agricultural : The pesticide(s) were not intended to contribute to the production of agricultural commodities. This includes: 1) residential pesticide uses, 2) structural pest control, 3) rights-of-way, 4) parks, 5) landscaped urban areas, and 6) manufacture, transportation and storage of pesticides except on farm lands.

5. **County:** Individual counties in California where the incident occurred. If a county is not listed, there were no reported illnesses for that county for the year.

Whom to Contact:

California Department of Pesticide Regulation
Worker Health and Safety Branch
Phone: (916) 445-4222.
Physical address: 1001 I St., Sacramento CA 95814-2828.
Mailing address: P.O. Box 4015, Sacramento, CA 95812-4015
Fax: (916) 445-4280
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About the Pesticide Illness Surveillance Program Data

Pesticide-related illnesses have been tracked within the state of California for nearly 50 years. The California Environmental Protection Agency, Department of Pesticide Regulation (DPR) maintains a surveillance program which records human health effects of pesticide exposure. The Pesticide Illness Surveillance Program (PISP) documents information on adverse effects from pesticide products, whether elicited by the active ingredients, inert ingredients, impurities, or breakdown products. This program maintains a database, which is utilized for evaluating the circumstances of pesticide exposures resulting in illness. This database is consulted regularly by staff who evaluate(s) the effectiveness of the DPR pesticide safety programs and recommend changes when appropriate.

Cases Reported in California[1] as Associated with[2] Pesticide Exposure Summarized by the Type of Illness and the Type of Pesticides 2000

Type of Illness[3]	Antimicrobials[4]		Cholinesterase Inhibitors[4]		Other Pesticides[4]		Total
	Occupational[5]	Non-Occupational[5]	Occupational[5]	Non-Occupational[5]	Occupational[5]	Non-Occupational[5]	
Systemic							
Systemic with Respiratory and Topical Effects	10	2	31	4	35	11	**93**
Systemic with Respiratory Effects	21	3	23	36	38	20	**141**
Systemic with Topical Effects	4	1	27	7	20	5	**64**
Systemic Only	4	5	67	70	39	20	**205**
Respiratory							
Respiratory with Topical Effects	17	1	6	0	8	7	**39**
Respiratory Only	26	3	7	8	11	9	**64**
Topical							
Eye Only	94	7	6	2	29	9	**147**
Skin Only	44	2	7	0	67	4	**124**
Eye and Skin	5	1	2	0	8	1	**17**
Asymptomatic							
Asymptomatic	4	0	19	0	4	10	**37**
TOTAL	**229**	**25**	**195**	**127**	**259**	**96**	**931**

[1] **Source:** California Department of Pesticide Regulation, Pesticide Illness Surveillance Program.

[2] **Associated With:** Includes cases classified as definitely, probably or possibly related to pesticide exposure

Definite : High degree of correlation between pattern of exposure and resulting symptomatology. Requires both medical evidence (such as measured cholinesterase inhibition, positive allergy tests, characteristic signs observed by medical professional) and physical evidence of exposure (environmental and/or biological samples, exposure history) to support the conclusions.

Probable : Relatively high degree of correlation exists between the pattern of exposure and the resulting symptomatology. Either medical or physical evidence is inconclusive or unavailable.

Possible : Some degree of correlation evident. Medical and physical evidence are inconclusive or unavailable.

[3] **Type of Illness:** Categorization of the type of symptoms experienced.

Systemic : Any health effects not limited to the respiratory, skin and/or eye. Cases involving multiple illness symptom types including systemic symptoms are included in the systemic category.
Respiratory : Health effects involving any part of the respiratory tree.
Topical : Health effects involving only the eyes and/or skin. This excludes outward physical signs (miosis and lacrimation) related to effects on internal bodily systems. These signs are classified under 'Systemic.'
Asymptomatic : Exposure occurred, but did not result in illness/injury. Cholinesterase depression without symptoms falls in this category.

[4] **Type of Pesticide:** Type of pesticide based on functional class.

Antimicrobials : Pesticides used to kill or inactivate microbiological organisms (bacteria, viruses, etc.).

Cholinesterase Inhibitors : Pesticides known to inhibit the function of the cholinesterase enzyme.

Other Pesticides : Any pesticide that is not an antimicrobial or cholinesterase-inhibiting pesticide.

[5] **Occupational or Non-Occupational:** The relationship between the illness/injury and the individual's work

Occupational : Work related. The individual was on the job at the time of the incident. This includes both paid employees and volunteers working in similar capacity to paid employees.
Non-Occupational : Not work related. The individual was not on the job at the time of the incident. This category includes individuals on the way to or from work (before the start or after the end of their workday).

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Illnesses and Injuries Reported in California[1] Associated With[2] Pesticide Exposure Summarized by the Type of Activity and Type of Exposure 2000

Occupational[3]

Type of Activity[4]	Type of Exposure[5]								
	Drift	**Residue**	**Direct Spray/ Squirt**	**Spill/ Other Direct**	**Ingestion**	**Multiple**	**Other**	**Unknown**	**Total**
Mixer/Loader	6	0	5	39	0	0	3	1	54
Applicator	22	0	23	80	0	5	4	41	175
Mechanical	1	2	5	5	0	0	0	2	15
Packaging/Processing	8	34	0	0	0	0	0	0	42
Field Worker	78	75	3	2	0	2	0	1	161
Routine Indoor	46	41	2	3	0	3	7	0	102
Routine Outdoor	17	2	1	1	0	0	3	0	24
Manufacturing/Formulation	0	0	0	1	0	0	1	0	2
Transport/Storage/Disposal	0	0	1	16	0	0	7	4	28
Emergency Response	0	0	0	1	0	0	9	0	10
Other	11	13	2	8	0	4	5	0	43
Total Occupational Cases	***189***	***167***	***42***	***156***	***0***	***14***	***39***	***49***	***656***

Non-Occupational[3]

Type of Activity[4]	Type of Exposure[5]								
	Drift	**Residue**	**Direct Spray/ Squirt**	**Spill/ Other Direct**	**Ingestion**	**Multiple**	**Other**	**Unknown**	**Total**
Mixer/Loader	1	0	0	3	0	0	0	0	4
Applicator	11	0	7	11	0	0	1	6	36
Mechanical	0	0	1	0	0	0	0	0	1
Routine Indoor	70	13	0	2	8	3	0	0	96
Routine Outdoor	8	5	3	0	4	0	1	1	22
Other	7	3	3	5	38	4	1	2	63
Unknown	1	1	0	1	1	0	0	11	15
Total Non-Occupational Cases	***98***	***22***	***14***	***22***	***51***	***7***	***3***	***20***	***237***
Total Occupational/ Non-Occupational	**287**	**189**	**56**	**178**	**51**	**21**	**42**	**69**	**893**

[1] **Source:** California Department of Pesticide Regulation, Pesticide Illness Surveillance Program.

[2] **Associated With:** Includes cases classified as definitely, probably or possibly related to pesticide exposure

Definite : High degree of correlation between pattern of exposure and resulting symptomatology. Requires both medical evidence (such as measured cholinesterase inhibition, positive allergy tests, characteristic signs observed by medical professional) and physical evidence of exposure (environmental and/or biological samples, exposure history) to support the conclusions.

Probable : Relatively high degree of correlation exists between the pattern of exposure and the resulting symptomatology. Either medical or physical evidence is inconclusive or unavailable.

Possible : Some degree of correlation evident. Medical and physical evidence are inconclusive or unavailable.

[3] **Occupational Status:** Occupational or Non-Occupational

Occupational : Work related. The individual was on the job at the time of the incident. This includes both paid employees and volunteers working in similar capacity to paid employees.

Non-Occupational : Not work related. The individual was not on the job at the time of the incident. This category includes individuals on the way to or from work (before the start or after the end of their workday).

[4] **Type of Activity:** Activity of the injured individual at the time of exposure

Mixer/Loader : Mixes and/or loads pesticides. This includes: (1) removing a pesticide from its original container, (2) transferring the pesticide to a mixing or holding tank, (3) mixing pesticides prior to application, (4) driving a nurse rig, or (5) transferring the pesticide from a mix/holding tank or nurse rig to an application tank.

Applicator : Applies pesticides by any method or conducts activities considered ancillary to the application (e.g., cleans spray nozzles in the field).

Flagger : Flags for an aerial application, either fixed-winged or helicopter.

Mechanical : Maintains (e.g. cleans, repairs or conducts maintenance) pesticide contaminated equipment used to mix, load or apply pesticides as well as the protective equipment used by individuals involved in such activities. This excludes the following: 1) maintenance performed by applicators on their equipment incidental to the application; 2) maintenance performed by mixer/loaders on their equipment incidental to mixing and loading; 3) decontamination by HAZMAT teams.

Packaging/Processing : Handles (packs, processes or retails agricultural commodities from the packing house to the final market place. Field packing of agricultural commodities is classified as FIELD WORKER.

Field Worker : Works in an agricultural field performing tasks such as advising, scouting, harvesting, thinning, irrigating, driving tractor (except as part of an application), field packing, conducting cultural work in a greenhouse, etc. Researchers performing similar tasks in an agricultural field are also included.

Routine Indoor : Conducts activities in an indoor environment with minimal expectation for exposure to pesticides. This includes people in offices and businesses, residential structures, etc. who are not handling pesticides.

Routine Outdoor	:	Conducts activities in an outdoor environment with minimal expectation for exposure to pesticides. This excludes field workers in agricultural fields. This includes gardeners who are not handling pesticides.
Manufacturing and Formulation	:	Manufactures, processes or packages pesticides. This includes "mixing" if it is done in a plant for application elsewhere.
Transport/ Storage/ Disposal	:	Transports or stores pesticides between packaging and preparation for use. This includes shipping, warehousing and retailing as well as storage by the end-user prior to preparation for use. Disposal of unused pesticides is also included in this activity. This excludes driving a nurse rig to an application site.
Emergency Response	:	Emergency Response Personnel (Police, fire, ambulance and HAZMAT personnel) responding to a fire, spill, accident or any other pesticide incident in the line of duty.
Other	:	Activity is not adequately described by any other activity category. This includes but is not limited to: 1) being inside a vehicle; 2) dog groomers not handling pesticides; 3) individuals handling pesticide treated wood; 4) two or more activities with potential for pesticide exposure.
Unknown	:	Activity is not known

[5] **Type of Exposure:** Characterization of how an individual came in contact with a pesticide.

Drift	:	Spray, mist, fumes, or odor carried from the target site by air. Drift must be related to an application or mix/load activity.
Residue	:	The part of a pesticide that remains in the environment for a period of time following an application or drift. This includes odor after the completion of an application.
Direct Spray/Squirt	:	Material propelled by the application or mix/load equipment. Contact with the material can be by direct projection or ricochet. This includes exposure of mechanics working on application or mix/load equipment when the material is forced out by pressure.
Spill/Other Direct	:	Any of the following: 1) Contact made during an application or mixing/loading operation where the material is not propelled by the equipment; 2) Expected direct contact during use (e.g. washing dishes in a disinfectant solution); 3) Leaks, spills, etc. not related to an application.
Ingestion	:	Intentional or unintentional oral ingestion.
Multiple	:	Contact with pesticides occurred through two or more mechanisms.

Other	:	Other known route of exposure not included in other exposure categories. This includes, but not limited to: 1) Residue from a spill and 2) Exposure to smoke or pyrolitic products from a fire where pesticides are burning.
Unknown	:	Route of exposure is not known.

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Illnesses and Injuries Reported by California Physicians[1] Associated With[2] Pesticide Exposure Summarized by Pesticide(s) and Type of Illness 2000

Pesticide[3]	Systemic/ Respiratory[4]		Topical[4]		TOTAL	
	Definite/ Probable	Possible	Definite/ Probable	Possible	Definite/ Probable	Possible
Organophosphates						
Acephate	1	1	0	0	1	1
Chlorpyrifos	11	24	4	1	15	25
Diazinon	17	2	1	0	18	2
Dimethoate	57	1	2	0	59	1
Disulfoton	1	0	0	0	1	0
Fenamiphos	0	1	0	0	0	1
Malathion	17	2	2	0	19	2
Naled	5	0	0	0	5	0
Sulfotep	0	6	0	0	0	6
N-Methyl Carbamates						
Aldicarb	0	1	0	1	0	2
Carbaryl	2	0	0	0	2	0
Methomyl	1	1	1	0	2	1
Propoxur	1	0	0	0	1	0
Pyrethrins and Pyrethroids						
Allethrin	1	0	0	0	1	0
Bifenthrin	0	1	0	0	0	1
Cyfluthrin	1	1	0	1	1	2
Cyhalothrin	3	2	0	0	3	2
Cypermethrin	11	1	2	0	13	1
Deltamethrin	0	0	1	0	1	0
Esfenvalerate	1	2	1	1	2	3
Permethrin	6	1	0	0	6	1
Resmethrin	24	0	0	1	24	1
Tralomethrin	2	0	0	0	2	0
Organochlorines						
Chlordane	1	0	0	0	1	0
Lindane	1	0	0	0	1	0
Other Pesticides						
Aluminum Phosphide	2	0	0	0	2	0
Arsenic Trioxide	1	0	0	0	1	0
Azoxystrobin	1	0	0	0	1	0

Pesticide[3]	Systemic/ Respiratory[4]		Topical[4]		TOTAL	
	Definite/ Probable	Possible	Definite/ Probable	Possible	Definite/ Probable	Possible
Benomyl	1	2	0	2	1	4
Boric Acid	2	1	0	0	2	1
Brodifacoum	1	0	0	0	1	0
Bromadiolone	1	0	0	0	1	0
Bromoxynil	0	0	1	0	1	0
Bt (Berliner) Aizawai Serotype H-7	0	0	0	1	0	1
Butyric Anhydride	0	1	0	0	0	1
Calcium Hypochlorite	2	0	5	0	7	0
Chlorine	3	0	0	1	3	1
Chlorothalonil	0	1	2	0	2	1
Cinnamaldehyde	0	0	1	0	1	0
Copper Hydroxide	0	0	1	0	1	0
Copper Naphthenate	2	0	0	0	2	0
Cyanuric Acid	2	1	2	2	4	3
Cycloate	0	1	0	0	0	1
D-limonene	0	0	1	0	1	0
Dicofol	0	0	1	0	1	0
Diquat	0	0	0	2	0	2
Endothall	0	0	2	0	2	0
EPTC	0	0	0	1	0	1
Ethyl Alcohol	1	0	0	0	1	0
Glutaraldehyde	11	1	4	1	15	2
Glyphosate	2	3	11	3	13	6
Hydrogen Chloride	1	0	1	0	2	0
Imazalil	0	0	0	2	0	2
Imidacloprid	4	1	0	1	4	2
Iprodione	0	4	0	0	0	4
K Salts Of Fatty Acids	0	1	0	0	0	1
Lime-sulfur	0	0	1	0	1	0
MSMA	0	0	1	0	1	0
Magnesium Phosphide	1	0	0	0	1	0
Mancozeb	3	0	0	0	3	0
Mefenoxam	0	0	1	1	1	1
Mepiquat Chloride	0	1	1	0	1	1
Metaldehyde	0	1	0	0	0	1
Metam-sodium	6	1	2	1	8	2
Methyl Bromide	1	0	1	1	2	1
Methyl Iodide	0	0	1	0	1	0
Molinate	0	0	1	0	1	0

Pesticide[3]	Systemic/ Respiratory[4]		Topical[4]		TOTAL	
	Definite/ Probable	Possible	Definite/ Probable	Possible	Definite/ Probable	Possible
Neem Oil	0	0	1	0	1	0
Nonanoic Acid	0	0	0	1	0	1
Paraquat	0	2	0	0	0	2
Peroxyacetic Acid	1	0	1	1	2	1
Petroleum Distillates	0	0	1	0	1	0
Phenolic Disinfectants	1	0	5	1	6	1
Pine Oil	2	0	1	0	3	0
Propargite	2	1	1	1	3	2
Propiconazole	0	1	0	1	0	2
Quaternary Ammonia	3	2	39	2	42	4
Rimsulfuron	0	0	0	1	0	1
Sodium Hypochlorite	28	6	60	5	88	11
Strychnine	8	0	0	0	8	0
Sulfometuron Methyl	0	0	0	1	0	1
Sulfur	23	2	7	7	30	9
Sulfur Dioxide	0	1	3	0	3	1
Thiophanate-methyl	1	0	0	0	1	0
Trichloromelamine	0	0	3	1	3	1
Trifluralin	0	3	0	0	0	3
Ziram	0	0	1	0	1	0
Combinations of Antimicrobials	23	1	8	1	31	2
Combinations of Fumigants	10	4	1	0	11	4
Combinations of Fungicides	4	4	1	9	5	13
Combinations of Herbicides	2	3	2	2	4	5
Combinations of Insecticides Including ChE Inhibitor(s)	45	58	2	2	47	60
Combinations of Insecticides Without ChE Inhibitor(s)	26	6	9	3	35	9
Miscellaneous Combinations	17	19	5	10	22	29
Unknown Antimicrobials	5	0	5	0	10	0
Unknown Insecticides	6	1	1	0	7	1
Unknown Pesticides	3	2	3	0	6	2
TOTAL	**422**	**183**	**215**	**73**	**637**	**256**

[1] **Source:** California Department of Pesticide Regulation, Pesticide Illness Surveillance Program.

[2] **Associated With:** Includes cases classified as definitely, probably or possibly related to pesticide exposure

Definite : High degree of correlation between pattern of exposure and resulting symptomatology. Requires both medical evidence (such as measured cholinesterase inhibition, positive allergy tests, characteristic signs observed by medical professional) and physical evidence of exposure (environmental and/or biological samples, exposure history) to support the conclusions.

Probable : Relatively high degree of correlation exists between the pattern of exposure and the resulting symptomatology. Either medical or physical evidence is inconclusive or unavailable.

Possible : Some degree of correlation evident. Medical and physical evidence are inconclusive or unavailable.

[3] **Type of Pesticide:** Pesticides listed on this table are grouped according to frequent inquiries received by DPR. Other pesticides are then listed in alphabetical order.

[4] **Type of Illness:** Categorization of the type of symptoms experienced.

Systemic : Any health effects not limited to the skin and/or eye. Cases involving multiple illness symptom types including systemic symptoms are included in the systemic category.
Respiratory : Health effects involving any part of the respiratory tree.
Topical : Health effects involving only the eyes and/or skin. This excludes outward physical signs (miosis and lacrimation) related to effects on internal bodily systems. These signs are classified under 'Systemic.'

Whom to Contact:

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About the Pesticide Illness Surveillance Program Data

Pesticide-related illnesses have been tracked within the state of California for nearly 50 years. The California Environmental Protection Agency, Department of Pesticide Regulation (DPR) maintains a surveillance program which records human health effects of pesticide exposure. The Pesticide Illness Surveillance Program (PISP) documents information on adverse effects from pesticide products, whether elicited by the active ingredients, inert ingredients, impurities, or breakdown products. This program maintains a database, which is utilized for evaluating the circumstances of pesticide exposures resulting in illness. This database is consulted regularly by staff who evaluate(s) the effectiveness of the DPR pesticide safety programs and recommend changes when appropriate.

Summary of Cases Reported by California[1] as Associated With[2] Pesticide Exposure Summarized by Occupational Status and by Location of the Incident 2000

Incident Setting[3]	Occupational Exposures[4]		Non-Occupational Exposures[4]		TOTAL Definite/ Probable[2]	TOTAL Possible[2]
	Definite/ Probable[2]	Possible[2]	Definite/ Probable[2]	Possible[2]		
Farm	102	111	1	0	**103**	**111**
Nursery	18	7	1	0	**19**	**7**
Livestock Production Facility	0	0	1	0	**1**	**0**
Crop/Livestock Processing Facility	68	14	0	0	**68**	**14**
Animal Premise (Veterinary Hospital, Kennels, not Livestock)	6	0	0	0	**6**	**0**
Single Family Home	5	3	69	16	**74**	**19**
Multi-unit Housing	10	3	12	2	**22**	**5**
Labor Housing	0	0	3	0	**3**	**0**
Residential Institution	10	1	0	0	**10**	**1**
School	29	9	2	22	**31**	**31**
Prison	6	2	56	0	**62**	**2**
Hospital/Medical	39	13	1	0	**40**	**13**
Pesticide Manufacturing Facility	3	0	0	0	**3**	**0**
Industrial or Other Manufacturing Facility	1	3	0	0	**1**	**3**
Wood Treatment	1	0	0	0	**1**	**0**
Office/Business	42	8	1	1	**43**	**9**
Retail Establishment	18	1	0	0	**18**	**1**
Service Establishment	36	7	4	0	**40**	**7**
Wholesale Establishment	8	4	0	0	**8**	**4**
Road/Rail Or Utility Right Of Way	8	4	10	2	**18**	**6**
Park	6	8	0	0	**6**	**8**
Golf Course	2	1	0	1	**2**	**2**
Landscape, Lawn	7	1	1	0	**8**	**1**
Landscape, Other	2	0	2	5	**4**	**5**

Incident Setting[3]	Occupational Exposures[4]		Non-Occupational Exposures[4]		TOTAL Definite/ Probable[2]	TOTAL Possible[2]
	Definite/ Probable[2]	Possible[2]	Definite/ Probable[2]	Possible[2]		
Other (Telephone Poles, Fences, Etc)	21	2	0	0	**21**	**2**
Unknown	3	3	22	2	**25**	**5**
TOTAL	**451**	**205**	**186**	**51**	**637**	**256**

[1] **Source:** California Department of Pesticide Regulation, Pesticide Illness and Surveillance Program.

[2] **Associated With:** Includes cases classified as definitely, probably or possibly related to pesticide exposure

Definite : High degree of correlation between pattern of exposure and resulting symptomatology. Requires both medical evidence (such as measured cholinesterase inhibition, positive allergy tests, characteristic signs observed by medical professional) and physical evidence of exposure (environmental and/or biological samples, exposure history) to support the conclusions.

Probable : Relatively high degree of correlation exists between the pattern of exposure and the resulting symptomatology. Either medical or physical evidence is inconclusive or unavailable.

Possible : Some degree of correlation evident. Medical and physical evidence are inconclusive or unavailable.

[3] **Incident Setting:** Location where the incident occurred. The location may not coincide with the application site.

Farm : Areas where agricultural crops are grown. This excludes the following: 1) nurseries and greenhouses which are classified under NURSERY; 2) livestock and poultry farms; and 3) forestry operations.

Nursery : Facilities (including greenhouses) growing and selling plants, bulbs, seeds, etc. This includes the production of seedlings for transplanting into agricultural fields or forests.

Livestock Production Facility : Ranches, dairies, feedlots, egg production facilities, hatcheries and other establishments involved in keeping, grazing or feeding livestock or poultry for the sale of them or their products. This includes veterinary services provided for livestock.

Crop/Livestock Processing Facility : Facilities involved in packing, manufacturing or processing foods or beverages for human consumption and feed products for animals and fowl. This includes facilities that sort, grade and pack fresh fruits and vegetables.

Animal Premise (Veterinary Hospital, Kennels, Not Livestock) : Veterinary services, animal kennels**,** animal control facilities, dog grooming facilities and other services provided for companion animals. This excludes livestock.

Single Family Home : The house and other structures on property intended for use by a single family. This includes swimming pools, but excludes landscaped areas on the property.

Multi-Unit Housing	:	Apartments and multi-plexes and other buildings on property. This includes swimming pools, but excludes landscaped areas on the property.
Labor Housing	:	Lodging facility or residence provided for the labor force.
Residential Institution	:	Dormitories, nursing homes, homeless shelters and similar facilities.
School	:	Establishments that provide academic or technical instruction. This includes daycare centers.
Prison	:	Establishments for the confinement and correction of offenders as ordered by courts of law. This includes California youth authority facilities.
Hospital / Medical	:	Establishments that provide medical, surgical and other health services to people. This includes offices and clinics of doctors and dentists, hospitals, medical and dental laboratories, kidney dialysis centers and other health related facilities.
Pesticide Manufacturing Facility	:	Facilities engaged in manufacture and/or formulation of pesticides.
Industrial Or Other Manufacturing Facility	:	Facilities involved in the mechanical or chemical transformations of materials or substances into new products. This excludes: 1) facilities engaged in manufacture or formulation of pesticides; and 2) facilities engaged in treatment of wood to protect against pest damage.
Wood Treatment	:	Establishments involved in the treatment of wood with preservatives to protect against pest damage.
Office/Business	:	Commercial establishments including public and private business offices. This excludes retail establishments and service establishments.
Retail Establishment	:	Businesses engaged in selling merchandise for personal or household consumption and providing services related to the products. This excludes restaurants which are classified under service establishment.
Service Establishment	:	Establishments engaged in providing services to individuals, businesses and government. This includes restaurants, laundries, etc. This excludes medical service establishments.
Wholesale Establishment	:	Establishments involved in the distribution of merchandise to retail establishments or other wholesale establishments. This excludes "wholesalers" who sell directly to the public.
Road/Rail Or Utility Right Of Way	:	Roads, rails or utilities and adjacent right-of-way areas. This includes aqueducts, manholes, landscaped median strips and vehicles moving along roadways.
Park	:	An area of public land set aside for recreation. This includes public swimming pool facilities**.** This excludes private recreational facilities such as amusement parks, physical fitness facilities, etc. which are classified under SERVICE ESTABLISHMENT.

Golf Course	: Land used for playing or practicing golf, including putting greens and driving ranges. This excludes miniature golf courses.
Landscape, Lawn	: Landscaped lawns. This excludes lawn areas in the following locations: 1) road/rail or utility right-of-ways; 2) parks; and 3) golf courses.
Landscape, Other	: Landscaped ornamental shrub and tree areas. This excludes ornamental shrub and tree areas in the following locations: 1) road/rail or utility right-of-ways; 2) parks; and 3) golf courses.
Other	: Location of exposure occurred at a site not adequately described in any other incident setting category. This includes water supply systems and waste water treatment plants.
Unknown	: The location of the incident is unknown.

[4] **Occupational Status:** Occupational or Non-Occupational

Occupational	: Work related. The individual was on the job at the time of the incident. This includes both paid employees and volunteers working in similar capacity to paid employees.
Non-Occupational	: Not work related. The individual was not on the job at the time of the incident. This category includes individuals on the way to or from work (before the start or after the end of their workday).

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About the Pesticide Illness Surveillance Program Data

Pesticide-related illnesses have been tracked within the state of California for nearly 50 years. The California Environmental Protection Agency, Department of Pesticide Regulation (DPR) maintains a surveillance program which records human health effects of pesticide exposure. The Pesticide Illness Surveillance Program (PISP) documents information on adverse effects from pesticide products, whether elicited by the active ingredients, inert ingredients, impurities, or breakdown products. This program maintains a database, which is utilized for evaluating the circumstances of pesticide exposures resulting in illness. This database is consulted regularly by staff who evaluate(s) the effectiveness of the DPR pesticide safety programs and recommend changes when appropriate.

Summary of Cases Reported in California[1] as Associated With[2] Pesticide Exposure Summarized by Gender, Age Distribution, by Type of Pesticide and by Type of Use
2000

Agricultural Use Pesticide Exposure Incidents[3]

Age Group	Pesticides other than Antimicrobial Pesticides[4]			Antimicrobial Pesticides[4]			TOTAL
	Male	Female	Unknown	Male	Female	Unknown	
0 - 9	8	2	0	0	0	0	**10**
10 - 14	4	3	0	0	0	0	**7**
15 - 19	9	1	0	0	0	0	**10**
20 - 29	66	47	0	3	2	0	**118**
30 - 39	59	37	0	1	9	0	**106**
40 - 49	54	34	0	0	5	0	**93**
50 - 59	22	7	0	0	2	0	**31**
60 - 69	10	1	0	1	0	0	**12**
70 +	3	0	0	0	0	0	**3**
Unknown	17	10	0	0	0	0	**27**
TOTAL	**252**	**142**	**0**	**5**	**18**	**0**	**417**

Non-Agricultural Use Pesticide Exposure Incidents

Age Group	Pesticides other than Antimicrobial Pesticides			Antimicrobial Pesticides			TOTAL
	Male	Female	Unknown	Male	Female	Unknown	
0 - 9	8	7	0	3	2	0	**20**
10 - 14	0	3	0	0	0	0	**3**
15 - 19	4	4	0	11	6	0	**25**
20 - 29	15	14	0	31	26	0	**86**
30 - 39	33	22	0	30	38	0	**123**
40 - 49	29	29	0	21	27	0	**106**
50 - 59	13	14	0	6	13	0	**46**
60 - 69	5	1	0	4	4	0	**14**
70 +	9	4	0	0	1	0	**14**
Unknown	14	21	0	1	3	0	**39**
TOTAL	**130**	**119**	**0**	**107**	**120**	**0**	**476**

[1] **Source:** California Department of Pesticide Regulation, Pesticide Illness and Surveillance Program.

[2] **Associated With:** Includes cases classified as definitely, probably or possibly related to pesticide exposure

Definite : High degree of correlation between pattern of exposure and resulting symptomatology. Requires both medical evidence (such as measured cholinesterase inhibition, positive allergy tests, characteristic signs observed by medical professional) and physical evidence of exposure (environmental and/or biological samples, exposure history) to support the conclusions.

Probable : Relatively high degree of correlation exists between the pattern of exposure and the resulting symptomatology. Either medical or physical evidence is inconclusive or unavailable.

Possible : Some degree of correlation evident. Medical and physical evidence are inconclusive or unavailable.

[3] **Intended Use:** Agricultural/Non-Agricultural - Indicates whether the suspected pesticide(s) is intended to contribute to the production of agricultural commodities.

Agricultural : The pesticide(s) were intended to contribute to the production of agricultural commodities, including livestock. This includes: 1) agricultural research facilities, 2) handling of raw agricultural commodities in packing houses, 3) drift from agricultural applications into non-agricultural areas, and 4) transportation and storage of pesticides on farm lands. It excludes forestry operations, although they are classified as agricultural for regulatory purposes. It also excludes manufacture, transportation, and storage of pesticides prior to arrival at the site of agricultural production.

Non-Agricultural : The pesticide(s) were not intended to contribute to the production of agricultural commodities. This includes: 1) residential pesticide uses, 2) structural pest control, 3) rights-of-way, 4) parks, 5) landscaped urban areas, and 6) manufacture, transportation and storage of pesticides except on farm lands.

[4] **Antimicrobial :** Pesticides used to kill or inactivate microbiological organisms (bacteria, viruses, etc.).

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Illnesses and Injuries of Application Workers Reported by California Physicians[1] Associated With[2] Pesticide Exposure Summarized by the Type of Equipment, Type of Activity and Occupational Status 2000

Occupational[3]

Type of Equipment[4]	Type of Activity[5]				
	Mixer/ Loader	Applicator	Flagger	Mechanic	Total
Fixed Wing Aircraft	2	2	0	0	**4**
Air, Other or Unspecified	1	0	0	0	**1**
Ground, Boom Below/Behind	0	5	0	0	**5**
Over-the-vine Boom	0	0	0	1	**1**
Airblast Sprayers	3	1	0	1	**5**
Ground Boom, Other or Unspecified	1	3	0	0	**4**
Ground, Other or Unspecified	2	19	0	4	**25**
Pressurized Hose-line Sprayers	0	11	0	1	**12**
Hand Pump Sprayer	1	7	0	0	**8**
Hand-held Dusters	0	2	0	0	**2**
Back Pack Sprayer	0	9	0	0	**9**
Unpressurized Hand-held Spray Equipment	3	9	0	0	**12**
Aerosol Can	0	2	0	0	**2**
Foggers	0	1	0	0	**1**
Hand, Other or Unspecified	0	9	0	0	**9**
Chamber	0	6	0	0	**6**
Automatic Equipment, Chlorinators	3	2	0	8	**13**
Drip Irrigation Equipment	0	1	0	0	**1**
Sprinkler Irrigation Equipment	0	1	0	0	**1**
Automatic Equipment, Other or Unspecified	2	1	0	0	**3**
Immersion Equipment	10	17	0	0	**27**
Implements with Handles	6	8	0	0	**14**

Occupational[3]

Type of Equipment[4]	Type of Activity[5]				
	Mixer/ Loader	**Applicator**	**Flagger**	**Mechanic**	**Total**
Implements without Handles	2	8	0	0	**10**
Manual Placement	1	10	0	0	**11**
Manual Application Methods, Other or Unspecified	11	30	0	0	**41**
Other	1	2	0	0	**3**
Unknown	5	9	0	0	**14**
Total Occupational Cases	**54**	**175**	**0**	**15**	**244**

Non-Occupational[3]

Type of Equipment[4]	Type of Activity[5]				
	Mixer/ Loader	**Applicator**	**Flagger**	**Mechanic**	**Total**
Pressurized Hose-line Sprayers	0	1	0	1	**2**
Hand Pump Sprayer	0	2	0	0	**2**
Unpressurized Hand-held Spray Equipment	0	4	0	0	**4**
Aerosol Can	0	9	0	0	**9**
Foggers	0	5	0	0	**5**
Hand, Other or Unspecified	0	4	0	0	**4**
Manual Placement	3	6	0	0	**9**
Manual Application Methods, Other or Unspecified	1	4	0	0	**5**
Unknown	0	1	0	0	**1**
Total Non-Occupational Cases	**4**	**36**	**0**	**1**	**41**
Total Occupational and Non-Occupational Cases	**58**	**211**	**0**	**16**	**285**

[1] **Source:** California Department of Pesticide Regulation, Pesticide Illness Surveillance Program.

[2] **Associated With:** Includes cases classified as definitely, probably or possibly related to pesticide exposure

Definite : High degree of correlation between pattern of exposure and resulting symptomatology. Requires both medical evidence (such as measured cholinesterase inhibition, positive allergy tests, characteristic signs observed by medical professional) and physical evidence of exposure (environmental and/or biological samples, exposure history) to support the conclusions.

Probable : Relatively high degree of correlation exists between the pattern of exposure and the resulting symptomatology. Either medical or physical evidence is inconclusive or unavailable.

Possible : Some degree of correlation evident. Medical and physical evidence are inconclusive or unavailable.

[3] **Occupational Status:** Occupational or Non-Occupational

Occupational : Work related. The individual was on the job at the time of the incident. This includes both paid employees and volunteers working in similar capacity to paid employees.

Non-Occupational : Not work related. The individual was not on the job at the time of the incident. This category includes individuals on the way to or from work (before the start or after the end of their workday).

[4] **Type of Activity:** Activity of the injured individual at the time of exposure

Mixer/Loader : Mixes and/or loads pesticides. This includes: (1) removing a pesticide from its original container, (2) transferring the pesticide to a mixing or holding tank, (3) mixing pesticides prior to application, (4) driving a nurse rig, or (5) transferring the pesticide from a mix/holding tank or nurse rig to an application tank.

Applicator : Applies pesticides by any method or conducts activities considered ancillary to the application (e.g., cleans spray nozzles in the field).

Flagger : Flags for an aerial application, either fixed-winged or helicopter.

Mechanic : Maintains (e.g. cleans, repairs or conducts maintenance) pesticide contaminated equipment used to mix, load or apply pesticides as well as the protective equipment used by individuals involved in such activities. This excludes the following: 1) maintenance performed by applicators on their equipment incidental to the application; 2) maintenance performed by mixer/loaders on their equipment incidental to mixing and loading; 3) decontamination by HAZMAT teams.

[5] **Type of Equipment Used:** Defines the type of application equipment regardless of who performed the application. If the type of equipment is not represented on the table, there were no cases involving that type of equipment for the year of the report.

Fixed Wing Aircraft : Fixed wing aircraft.

Air, Other Or Unspecified : Aerial application equipment, other or unspecified. This includes two or more types of aerial application equipment and excludes fixed wing aircraft and helicopters.

Ground Boom Below/Behind	:	Ground application equipment with a spray boom located below or behind the equipment operator with the spray nozzles pointed downward.
Over-the-Vine Boom	:	Ground operated equipment with the arms of the spray boom extending over the tops of grapevines.
Airblast Sprayers	:	Ground application equipment with a pump that delivers spray into an air stream created by a large fan at the back of the spray equipment.
Ground Boom, Other Or Unspecified	:	Ground application equipment with a spray boom. The following are excluded: 1) Ground Boom Below/Behind, 2) Over-The-Vine Boom, and 3) Electrostatic Sprayer.
Ground, Other Or Unspecified	:	Ground application equipment, unknown or unspecified. This includes two or more types of ground application equipment This excludes types of ground equipment already specified above.
Pressurized Hose-Line Sprayers	:	Hand-held spray equipment attached by a long hose to a power-pressurized tank. This excludes hose-end sprayers, which are classified under hand, other or unspecified.
Hand Pump Sprayer	:	Hand-held compressed air sprayer with small volume tanks (1 to 5 gallons). This excludes backpack sprayers.
Hand-Held Dusters	:	Hand-held application equipment for granules or dust. This includes belly grinders, bellows, squeeze bulbs, etc.
Back Pack Sprayer	:	Compressed air sprayer where the tank is worn on the back of the applicator.
Unpressurized Hand-Held Spray Equipment	:	Hand-held spray bottles (usually plastic) with built-in finger triggers.
Aerosol Can	:	Disposable pressurized cans designed for intermittent use. The pesticide is propelled out of the can by an inert compressed gas propellant. This excludes foggers.
Foggers	:	Disposable pressurized cans designed for the total release of the contents in a single use. The pesticide is propelled out of the can by an inert compressed gas propellant.
Hand, Other Or Unspecified	:	Hand-held application equipment, other or unspecified. The equipment must propel the pesticide from a reservoir. This includes 1) hose-end sprayers, and 2) two or more types of hand-held application equipment. This excludes hand-held equipment already specified above.
Chamber	:	An enclosed, sealed chamber designed specifically for fumigating or sterilizing the contents of the chamber.
Automatic Equipment, Chlorinators	:	Chlorination units that automatically inject chlorine into water for disinfection purposes. This includes chlorinators for swimming pools, packing houses and food processing plants.
Drip Irrigation Equipment	:	Chemigation through drip irrigation equipment.
Sprinkler Irrigation Equipment	:	Chemigation through sprinkler irrigation equipment.
	:	

Automatic Equipment, Other Or Unspecified	Equipment that automatically injects the pesticide to the target area. This includes equipment attached to milking machinery, dishwashers, etc. This excludes equipment already described above.
Immersion Equipment	: Tanks, trays, sinks, etc. used for the dipping of animals, produce, bulbs, medical equipment, dishes, pots and pans, etc.
Implements With Handles	: Mops, brushes, and other implements with handles.
Implements Without Handles	: Cloths, towels, rags, sponges and other implements without handles.
Manual Placement	: Manual placement of a pesticide directly to a target site. This includes bait stations, hand tossed pellets, and direct pouring of a pesticide onto a target surface from a container (such as pouring liquid chlorine directly into swimming pool water). This excludes the placement of fumigation pellet packs in chambers and under tarps.
Manual Application Methods, Other Or Unspecified	: Manual application methods, other or unspecified. The pesticide is not propelled by any type of equipment. This includes two or more types of manual application methods. This excludes manual application method already described above.
Other	: Any application methodology not described above. This includes two or more types of application equipment not elsewhere specified.
Unknown	: The type of application equipment is not known.

Whom to Contact:

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About the Pesticide Illness Surveillance Program Data

Pesticide-related illnesses have been tracked within the state of California for nearly 50 years. The California Environmental Protection Agency, Department of Pesticide Regulation (DPR) maintains a surveillance program which records human health effects of pesticide exposure. The Pesticide Illness Surveillance Program (PISP) documents information on adverse effects from pesticide products, whether elicited by the active ingredients, inert ingredients, impurities, or breakdown products. This program maintains a database, which is utilized for evaluating the circumstances of pesticide exposures resulting in illness. This database is consulted regularly by staff who evaluate(s) the effectiveness of the DPR pesticide safety programs and recommend changes when appropriate.

Hospitalization and Disability[1] Associated with[2] Illnesses/Injuries *Definitely or Probably* Related to Pesticide Exposure in California, Summarized by Occupational Status and Activity 2000

Occupational[3]

Activity[4]	Total Cases	Hospitalization			Disability		
		No. Cases	%	Unknown	No. Cases	%	Unknown
Mixer/Loader	53	0	0	1	15	28.3	1
Applicator	130	1	0.8	0	27	20.8	5
Mechanical	10	0	0	0	4	40	0
Packaging/Processing	31	0	0	0	25	80.6	0
Field Worker	72	2	2.8	1	34	47.2	2
Routine Indoor	77	1	1.3	0	17	22.1	4
Routine Outdoor	14	0	0	0	2	14.3	1
Manufacturing/Formulation	2	0	0	0	1	50	0
Transport/Storage/Disposal	23	0	0	0	3	13	4
Emergency Response	10	0	0	0	0	0	1
Other	29	0	0	0	6	20.7	0
Total Occupational	**451**	**4**	**0.9**	**2**	**134**	**29.7**	**18**

Non- Occupational[3]

Activity	Total Cases	Hospitalization			Disability		
		No. Cases	%	Unknown	No. Cases	%	Unknown
Mixer/Loader	4	1	25	0	0	0	3
Applicator	27	0	0	0	0	0	4
Mechanical	1	0	0	0	0	0	1
Routine Indoor	87	1	1.1	0	1	1.1	67
Routine Outdoor	12	2	16.7	0	0	0	6
Other	54	25	46.3	4	9	16.7	25
Unknown	1	0	0	0	0	0	0
Total Non-Occupational	**186**	**29**	**15.6**	**4**	**10**	**5.4**	**106**
TOTAL CASES	**637**	**33**	**5.2**	**6**	**144**	**22.6**	**124**

[1] **Source:** California Department of Pesticide Regulation, Pesticide Illness Surveillance Program.

[2] **Relationship:** Degree of correlation between pesticide exposure and resulting symptomatology.

Definite : High degree of correlation between pattern of exposure and resulting symptomatology. Requires both medical evidence (such as measured cholinesterase inhibition, positive allergy tests, characteristic signs observed by medical professional) and physical evidence of exposure (environmental and/or biological samples, exposure history) to support the conclusions.

Probable : Relatively high degree of correlation exists between the pattern of exposure and the resulting symptomatology. Either medical or physical evidence is inconclusive or unavailable.

[3] **Occupational Status:** Occupational or Non-Occupational

Occupational	: Work related. The individual was on the job at the time of the incident. This includes both paid employees and volunteers working in similar capacity to paid employees.
Non-Occupational	: Not work related. The individual was not on the job at the time of the incident. This category includes individuals on the way to or from work (before the start or after the end of their workday).

[4] **Type of Activity:** Activity of the individual at the time of exposure.

Mixer/Loader	: Mixes and/or loads pesticides. This includes: (1) removing a pesticide from its original container, (2) transferring the pesticide to a mixing or holding tank, (3) mixing pesticides prior to application, (4) driving a nurse rig, or (5) transferring the pesticide from a mix/holding tank or nurse rig to an application tank.
Applicator	: Applies pesticides by any method or conducts activities considered ancillary to the application (e.g., cleans spray nozzles in the field).
Flagger	: Flags for an aerial application, either fixed-winged or helicopter.
Mechanical	: Maintains (e.g. cleans, repairs or conducts maintenance) pesticide contaminated equipment used to mix, load or apply pesticides as well as the protective equipment used by individuals involved in such activities. This excludes the following: 1) maintenance performed by applicators on their equipment incidental to the application; 2) maintenance performed by mixer/loaders on their equipment incidental to mixing and loading; 3) decontamination by HAZMAT teams.
Packaging and Processing	: Handles (packs, processes or retails agricultural commodities from the packing house to the final market place. Field packing of agricultural commodities is classified as FIELD WORKER.
Field Worker	: Works in an agricultural field performing tasks such as advising, scouting, harvesting, thinning, irrigating, driving tractor (except as part of an application), field packing, conducting cultural work in a greenhouse, etc. Researchers performing similar tasks in an agricultural field are also included.
Routine Indoor	: Conducts activities in an indoor environment with minimal expectation for exposure to pesticides. This includes people in offices and businesses, residential structures, etc. who are not handling pesticides.
Manufacturing and Formulation	: Manufactures, processes or packages pesticides. This includes “mixing” if it is done in a plant for application elsewhere.

Transport/ Storage/ Disposal	:	Transports or stores pesticides between packaging and preparation for use. This includes shipping, warehousing and retailing as well as storage by the end-user prior to preparation for use. Disposal of unused pesticides is also included in this activity. This excludes driving a nurse rig to an application site.
Emergency Response	:	Emergency Response Personnel (Police, fire, ambulance and HAZMAT personnel) responding to a fire, spill, accident or any other pesticide incident in the line of duty.
Other	:	Activity is not adequately described by any other activity category. This includes but is not limited to: 1) being inside a vehicle; 2) dog groomers not handling pesticides; 3) individuals handling pesticide treated wood; 4) two or more activities with potential for pesticide exposure.
Unknown	:	Activity is not known

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Hospitalization and Disability[1] Associated with[2] Illnesses/Injuries *Possibly* Related to Pesticide Exposure in California, Summarized by Occupational Status and Activity 2000

Occupational[3]

Activity[4]	Total Cases	Hospitalization			Disability		
		No. Cases	%	Unknown	No. Cases	%	Unknown
Mixer/Loader	1	0	0	0	1	100	0
Applicator	45	0	0	0	7	15.6	7
Mechanical	5	0	0	0	0	0	0
Packaging/Processing	11	0	0	0	7	63.6	0
Field Worker	89	0	0	0	20	22.5	3
Routine Indoor	25	1	4	2	9	36	5
Routine Outdoor	10	0	0	0	2	20	0
Transport/Storage/Disposal	5	0	0	0	0	0	1
Other	14	0	0	0	3	21.4	1
Total Occupational	**205**	**1**	**0.5**	**2**	**49**	**23.9**	**17**

Non- Occupational[3]

Activity	Total Cases	Hospitalization			Disability		
		No. Cases	%	Unknown	No. Cases	%	Unknown
Applicator	9	1	11.1	1	1	11.1	4
Routine Indoor	9	0	0	0	0	0	4
Routine Outdoor	10	0	0	0	1	10	2
Other	9	1	11.1	0	0	0	6
Unknown	14	0	0	0	0	0	11
Total Non-Occupational	**51**	**2**	**3.9**	**1**	**2**	**3.9**	**27**
Total Cases	**256**	**3**	**1.2**	**3**	**51**	**19.9**	**44**

[1] **Source:** California Department of Pesticide Regulation, Pesticide Illness Surveillance Program.

[2] **Relationship:** Degree of correlation between pesticide exposure and resulting symptomatology.

Possible : Some degree of correlation evident. Medical and physical evidence are inconclusive or unavailable.

[3] **Occupational Status:** Occupational or Non-Occupational

Occupational	: Work related. The individual was on the job at the time of the incident. This includes both paid employees and volunteers working in similar capacity to paid employees.
Non-Occupational	: Not work related. The individual was not on the job at the time of the incident. This category includes individuals on the way to or from work (before the start or after the end of their workday).

[4] **Type of Activity:** Activity of the individual at the time of exposure.

Mixer/Loader	: Mixes and/or loads pesticides. This includes: (1) removing a pesticide from its original container, (2) transferring the pesticide to a mixing or holding tank, (3) mixing pesticides prior to application, (4) driving a nurse rig, or (5) transferring the pesticide from a mix/holding tank or nurse rig to an application tank.
Applicator	: Applies pesticides by any method or conducts activities considered ancillary to the application (e.g., cleans spray nozzles in the field).
Flagger	: Flags for an aerial application, either fixed-winged or helicopter.
Mechanical	: Maintains (e.g. cleans, repairs or conducts maintenance) pesticide contaminated equipment used to mix, load or apply pesticides as well as the protective equipment used by individuals involved in such activities. This excludes the following: 1) maintenance performed by applicators on their equipment incidental to the application; 2) maintenance performed by mixer/loaders on their equipment incidental to mixing and loading; 3) decontamination by HAZMAT teams.
Packaging and Processing	: Handles (packs, processes or retails agricultural commodities from the packing house to the final market place. Field packing of agricultural commodities is classified as FIELD WORKER.
Field Worker	: Works in an agricultural field performing tasks such as advising, scouting, harvesting, thinning, irrigating, driving tractor (except as part of an application), field packing, conducting cultural work in a greenhouse, etc. Researchers performing similar tasks in an agricultural field are also included.
Routine Indoor	: Conducts activities in an indoor environment with minimal expectation for exposure to pesticides. This includes people in offices and businesses, residential structures, etc. who are not handling pesticides.
Manufacturing and Formulation	: Manufactures, processes or packages pesticides. This includes “mixing” if it is done in a plant for application elsewhere.
Transport/ Storage/ Disposal	: Transports or stores pesticides between packaging and preparation for use. This includes shipping, warehousing and retailing as well as storage by the end-user prior to preparation for use. Disposal of unused pesticides is also included in this activity. This excludes driving a nurse rig to an application site.
Emergency Response	: Emergency Response Personnel (Police, fire, ambulance and HAZMAT personnel) responding to a fire, spill, accident or any other pesticide incident in the line of duty.
Other	: Activity is not adequately described by any other activity category. This includes but is not limited to: 1) being inside a vehicle; 2) dog groomers not handling pesticides; 3) individuals handling pesticide treated wood; 4) two or more activities with potential for pesticide exposure.

Unknown : Activity is not known

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Agricultural Drift Cases Reported in California[1] Associated With[2] Pesticide Exposure Summarized by Application Sites
2000

Application Site[3]	Number of Cases[4]	Number of Incidents[5]
BERRIES		
Strawberries	11	3
CITRUS		
Lemons	4	2
CUCURBITS		
Cucurbits (Other or Unspecified)	1	1
FIBER CROP		
Cotton	3	2
FORAGE CROP		
Alfalfa	1	1
Forage - Fodder Grasses (Other or Unspecified Hay)	2	2
GRAIN		
Corn	1	1
GRAPES		
Grapes	3	3
NON-CROP		
Soil	16	3
Uncultivated Agricultural Areas (Other or Unspecified)	4	3
NUT TREES		
Almonds	30	5
Walnuts	1	1
ORNAMENTAL		
Ornamental Plants (Other or Unspecified)	6	3
Roses	1	1
PREMISES		
Animal Husbandry Premises	58	1
Greenhouses (Environs, Benches, Etc.)	1	1

Application Site[3]	Number of Cases[4]	Number of Incidents[5]
STONE FRUIT		
Nectarines	1	1
Prunes	4	1
TREES		
Ornamental and/or Shade Trees	1	1
VEGETABLE, FRUITING		
Tomatoes	5	1
VEGETABLE, LEAFY/STEM		
Artichokes (Globe)	2	1
Broccoli	22	1
Lettuce	1	1
VEGETABLE, ROOT CROP		
Potatoes	1	1
TOTAL	**180**	**41**

[1] **Source:** California Department of Pesticide Regulation, Pesticide Illness and Surveillance Program.

[2] **Associated With:** Includes cases classified as definitely, probably or possibly related to pesticide exposure

Definite : High degree of correlation between pattern of exposure and resulting symptomatology. Requires both medical evidence (such as measured cholinesterase inhibition, positive allergy tests, characteristic signs observed by medical professional) and physical evidence of exposure (environmental and/or biological samples, exposure history) to support the conclusions.

Probable : Relatively high degree of correlation exists between the pattern of exposure and the resulting symptomatology. Either medical or physical evidence is inconclusive or unavailable.

Possible : Some degree of correlation evident. Medical and physical evidence are inconclusive or unavailable.

[3] **Application Sites:** Site of the pesticide application. For crops, this includes applications at the growing site and to the commodity while being packed for sale. For incidents involving drift, the intended application site is listed.

[4] **Cases:** Indicates the number of individuals affected by agricultural drift.

[5] **Incidents:** Indicates the number of episodes where agricultural pesticide drift occurred based on the application site.

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Agricultural Drift Cases[1] Reported by California Physicians as Associated With[2] Pesticide Exposure Summarized by the Activity of the Exposed Person and by the Type of Application Equipment Used
2000

Type of Application Equipment Used [3]	Type of Activity [4]				TOTAL
	Routine Indoor	Routine Outdoor	Field Worker	Other	
Fixed Wing Aircraft	0	2	3	2	**7**
Helicopter	0	2	52	0	**54**
Ground, Boom Below/Behind	6	0	2	0	**8**
Electrostatic Sprayer	0	3	0	0	**3**
Airblast Sprayers	0	1	0	2	**3**
Ground, Other or Unspecified	0	5	4	9	**18**
Ground Boom, Other or Unspecified	0	0	1	0	**1**
Shank Injection with Tarps	0	0	9	0	**9**
Pressurized Hose-line Sprayers	58	2	4	1	**65**
Aerosol/Fog Generating Equipment	0	0	2	0	**2**
Hand, Other or Unspecified	0	0	1	0	**1**
Drip Irrigation Equipment	0	0	0	1	**1**
Automatic Equipment, Chlorinators	0	0	0	7	**7**
Immersion Equipment	0	0	0	1	**1**
TOTAL	**64**	**15**	**78**	**23**	**180**

[1] **Source:** California Department of Pesticide Regulation, Pesticide Illness Surveillance Program

[2] **Associated With:** Includes cases classified as definitely, probably or possibly related to pesticide exposure

Definite : High degree of correlation between pattern of exposure and resulting symptomatology. Requires both medical evidence (such as measured cholinesterase inhibition, positive allergy tests, characteristic signs observed by medical professional) and physical evidence of exposure (environmental and/or biological samples, exposure history) to support the conclusions.

Probable : Relatively high degree of correlation exists between the pattern of exposure and the resulting symptomatology. Either medical or physical evidence is inconclusive or unavailable.

Possible : Some degree of correlation evident. Medical and physical evidence are inconclusive or unavailable.

[3] **Type of Equipment Used:** Defines the type of application equipment regardless of who performed the application. If the type of equipment is not represented on the table, there were no cases involving that type of equipment for the year of the report.

Fixed Wing Aircraft : Fixed wing aircraft.

Helicopter	: Helicopter.
Ground Boom Below/Behind	: Ground application equipment with a spray boom located below or behind the equipment operator with the spray nozzles pointed downward.
Electrostatic Sprayer	: Ground operated equipment designed to impart an electrical charge to the pesticide particles. The electrostatic designation for ground application equipment overrides any other type of equipment it is used with.
Airblast Sprayers	: Ground application equipment with a pump that delivers spray into an air stream created by a large fan at the back of the spray equipment.
Ground, Other Or Unspecified	: Ground application equipment, unknown or unspecified. This includes two or more types of ground application equipment This excludes types of ground equipment already specified above.
Ground Boom, Other Or Unspecified	: Ground application equipment with a spray boom. The following are excluded: 1) Ground Boom Below/Behind, 2) Over-The-Vine Boom, and 3) Electrostatic Sprayer.
Shank Injection With Tarps	: Ground application equipment that uses a shank or other piece of equipment to directly apply a pesticide into the soil. A tarp is placed over the soil to restrict the pesticide to the application site.
Pressurized Hose-Line Sprayers	: Hand-held spray equipment attached by a long hose to a power-pressurized tank. This excludes hose-end sprayers, which are classified under hand, other or unspecified.
Aerosol/Fog Generating Equipment	: Refillable application equipment designed to disperse pesticide as a small airborne droplet, either in confined spaces or outdoor areas. These include truck-mounted equipment for outdoor use, hand-carried portable units and wall mounted electric units that are found in dairies, restaurants, etc.
Hand, Other Or Unspecified	: Hand-held application equipment, other or unspecified. The equipment must propel the pesticide from a reservoir. This includes 1) hose-end sprayers, and 2) two or more types of hand-held application equipment. This excludes hand-held equipment already specified above.
Drip Irrigation Equipment	: Chemigation through drip irrigation equipment.
Automatic Equipment, Chlorinators	: Chlorination units that automatically inject chlorine into water for disinfection purposes. This includes chlorinators for swimming pools, packing houses and food processing plants.
Immersion Equipment	: Tanks, trays, sinks, etc. used for the dipping of animals, produce, bulbs, medical equipment, dishes, pots and pans, etc.

[4] **Type of Activity:** Activity of the individual at the time of exposure.

Field Worker	Works in an agricultural field performing tasks such as advising, scouting, harvesting, thinning, irrigating, driving tractor (except as part of an application), field packing, conducting cultural work in a greenhouse, etc. Researchers performing similar tasks in an agricultural field are also included.
Routine Indoor	Conducts activities in an indoor environment with minimal expectation for exposure to pesticides. This includes people in offices and businesses, residential structures, etc. who are not handling pesticides.

Routine Outdoor	Conducts activities in an outdoor environment with minimal expectation for exposure to pesticides. This excludes field workers in agricultural fields. This includes gardeners who are not handling pesticides.
Other	Activity is not adequately described by any other activity category. This includes but is not limited to: 1) being inside a vehicle; 2) dog groomers not handling pesticides; 3) individuals handling pesticide treated wood; 4) two or more activities with potential for pesticide exposure.

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Illnesses and Injuries in California[1] Associated With Pesticide Residue in Agricultural Fields, 1982-2000

Year	Systemic/ Respiratory[2]		Topical[2]		TOTAL
	Definite/ Probable[3]	Possible[3]	Definite/ Probable[3]	Possible[3]	
1982	23	43	48	117	**231**
1983	19	29	41	96	**185**
1984	7	7	50	114	**178**
1985	20	20	161	168	**369**
1986	29	10	156	63	**258**
1987	58	80	53	182	**373**
1988	57	35	75	204	**371**
1989	17	22	30	93	**162**
1990	3	32	11	119	**165**
1991	16	37	7	85	**145**
1992	11	57	18	112	**198**
1993	10	38	2	67	**117**
1994	33	29	5	42	**109**
1995	20	48	74	89	**231**
1996	29	37	15	60	**141**
1997	83	44	20	62	**209**
1998	40	19	5	47	**111**
1999	23	17	0	42	**82**
2000	21	30	2	22	**75**
Total	**519**	**634**	**773**	**1784**	**3710**

[1] **Source:** California Department of Pesticide Regulation, Pesticide Illness and Surveillance Program.

[2] **Type of Illness:** Categorization of the type of symptoms experienced.

Systemic	:	Any health effects not limited to the respiratory or skin and/or eye. Cases involving multiple illness symptom types including systemic symptoms are included in the systemic category.
Respiratory	:	Health effects involving any part of the respiratory tree.
Topical	:	Health effects involving only the eyes and/or skin. This excludes outward physical signs (miosis and lacrimation) related to effects on internal bodily systems. These signs are classified under 'Systemic.'

[3] **Associated With:** Includes cases classified as definitely, probably or possibly related to pesticide exposure

Definite : High degree of correlation between pattern of exposure and resulting symptomatology. Requires both medical evidence (such as measured cholinesterase inhibition, positive allergy tests, characteristic signs observed by medical professional) and physical evidence of exposure (environmental and/or biological samples, exposure history) to support the conclusions.

Probable : Relatively high degree of correlation exists between the pattern of exposure and the resulting symptomatology. Either medical or physical evidence is inconclusive or unavailable.

Possible : Some degree of correlation evident. Medical and physical evidence are inconclusive or unavailable.

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Incidents Involving *Field Workers* Reported in California[1] Associated With[2] Pesticide Residue Exposure Summarized by Crop and Type of Illness 2000

Crop	Systemic/ Respiratory[3]		Topical[3]		TOTAL
	Definite/ Probable	Possible	Definite/ Probable	Possible	
BERRIES					
Strawberries	0	0	0	1	1
CITRUS					
Oranges	0	17	0	0	17
FIBER CROP					
Cotton	0	1	0	1	2
GRAPES					
Grapes	18	7	2	17	44
ORNAMENTAL					
Ornamental Plants (Other or Unspecified)	0	2	0	1	3
Roses	1	0	0	0	1
POME FRUIT					
Pears	0	1	0	0	1
VEGETABLE, FRUITING					
Peppers	0	0	0	1	1
Tomatoes	2	0	0	1	3
VEGETABLE, LEAFY/STEM					
Broccoli	0	1	0	0	1
Lettuce	0	1	0	0	1
TOTAL	**21**	**30**	**2**	**22**	**75**

[1] **Source:** California Department of Pesticide Regulation, Pesticide Illness and Surveillance Program.

[2] **Associated With:** Includes cases classified as definitely, probably or possibly related to pesticide exposure

Definite : High degree of correlation between pattern of exposure and resulting symptomatology. Requires both medical evidence (such as measured cholinesterase inhibition, positive allergy tests, characteristic signs observed by medical professional) and physical evidence of exposure (environmental and/or biological samples, exposure history) to support the conclusions.

Probable : Relatively high degree of correlation exists between the pattern of exposure and the resulting symptomatology. Either medical or physical evidence is inconclusive or unavailable.

Possible : Some degree of correlation evident. Medical and physical evidence are inconclusive or unavailable.

[3] **Type of Illness:** Categorization of the type of symptoms experienced.

Systemic : Any health effects not limited to the respiratory or skin and/or eye. Cases involving multiple illness symptom types including systemic symptoms are included in the systemic category.
Respiratory : Health effects involving any part of the respiratory tree.
Topical : Health effects involving only the eyes and/or skin. This excludes outward physical signs (miosis and lacrimation) related to effects on internal bodily systems. These signs are classified under 'Systemic.'

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About the Pesticide Illness Surveillance Program Data

Pesticide-related illnesses have been tracked within the state of California for nearly 50 years. The California Environmental Protection Agency, Department of Pesticide Regulation (DPR) maintains a surveillance program which records human health effects of pesticide exposure. The Pesticide Illness Surveillance Program (PISP) documents information on adverse effects from pesticide products, whether elicited by the active ingredients, inert ingredients, impurities, or breakdown products. This program maintains a database, which is utilized for evaluating the circumstances of pesticide exposures resulting in illness. This database is consulted regularly by staff who evaluate(s) the effectiveness of the DPR pesticide safety programs and recommend changes when appropriate.

Pesticide-Associated Illnesses and Injuries[1, 2] Reported In California Schools by Exposure Category, Pesticide Type and Illness Symptoms 2000

Exposure[3]	Systemic/Respiratory[4]			Topical[4]			TOTAL
	Antimicrobial[5]	Cholinesterase Inhibitors[5]	Other Pesticides[5]	Antimicrobial[5]	Cholinesterase Inhibitors[5]	Other Pesticides[5]	
Drift	1	1	8	1	0	0	**11**
Residue	0	10	2	0	0	0	**12**
Direct Spray/Squirt	0	1	0	1	0	0	**2**
Spill/Other Direct	0	0	0	17	0	0	**17**
Multiple Exposures	0	4	0	0	0	0	**4**
Unknown	1	13	0	2	0	0	**16**
TOTAL	**2**	**29**	**10**	**21**	**0**	**0**	**62**

[1] **Source:** California Department of Pesticide Regulation, Pesticide Illness Surveillance Program.

[2] **Associated With:** Includes cases classified as definitely, probably or possibly related to pesticide exposure

Definite : High degree of correlation between pattern of exposure and resulting symptomatology. Requires both medical evidence (such as measured cholinesterase inhibition, positive allergy tests, characteristic signs observed by medical professional) and physical evidence of exposure (environmental and/or biological samples, exposure history) to support the conclusions.

Probable : Relatively high degree of correlation exists between the pattern of exposure and the resulting symptomatology. Either medical or physical evidence is inconclusive or unavailable.

Possible : Some degree of correlation evident. Medical and physical evidence are inconclusive or unavailable.

[3] **Type of Exposure:** Characterization of how an individual came in contact with a pesticide. Exposure categories not listed on the table indicate there were no illnesses that occurred under that category.

Drift	: Spray, mist, fumes, or odor carried from the target site by air. Drift must be related to an application or mix/load activity.
Residue	: The part of a pesticide that remains in the environment for a period of time following an application or drift. This includes odor after the completion of an application.
Direct Spray/Squirt	: Material propelled by the application or mix/load equipment. Contact with the material can be by direct projection or ricochet. This includes exposure of mechanics working on application or mix/load equipment when the material is forced out by pressure.
Spill/Other Direct	: Any of the following: 1) Contact made during an application or mixing/loading operation where the material is not propelled by the equipment; 2) Expected direct contact during use (e.g. washing dishes in a disinfectant solution); 3) Leaks, spills, etc. not related to an application.
Multiple	: Contact with pesticides occurred through two or more mechanisms.
Unknown	: Route of exposure is not known.

[4] **Type of Illness:** Categorization of the type of symptoms experienced.

Systemic	: Any health effects not limited to the respiratory, skin and/or eye. Cases involving multiple illness symptom types including systemic symptoms are included in the systemic category.
Respiratory	: Health effects involving any part of the respiratory tree.
Topical	: Health effects involving only the eyes and/or skin. This excludes outward physical signs (miosis and lacrimation) related to effects on internal bodily systems. These signs are classified under 'Systemic.'
Asymptomatic	: Exposure occurred, but did not result in illness/injury. Cholinesterase depression without symptoms falls in this category.

[5] **Type of Pesticide:** Type of pesticide based on functional class.

Antimicrobials	:	Pesticides used to kill or inactivate microbiological organisms (bacteria, viruses, etc.).
Cholinesterase Inhibitors	:	Pesticides known to inhibit the function of the cholinesterase enzyme.
Other Pesticides	:	Any pesticide that is not an antimicrobial or cholinesterase-inhibiting pesticide.

Whom to Contact:

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